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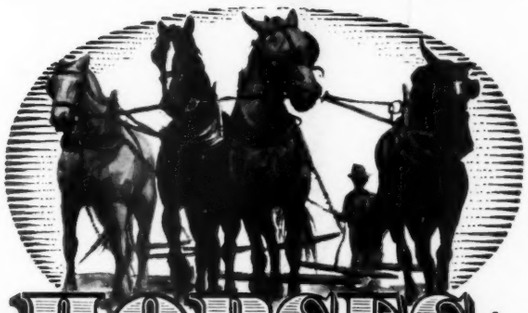

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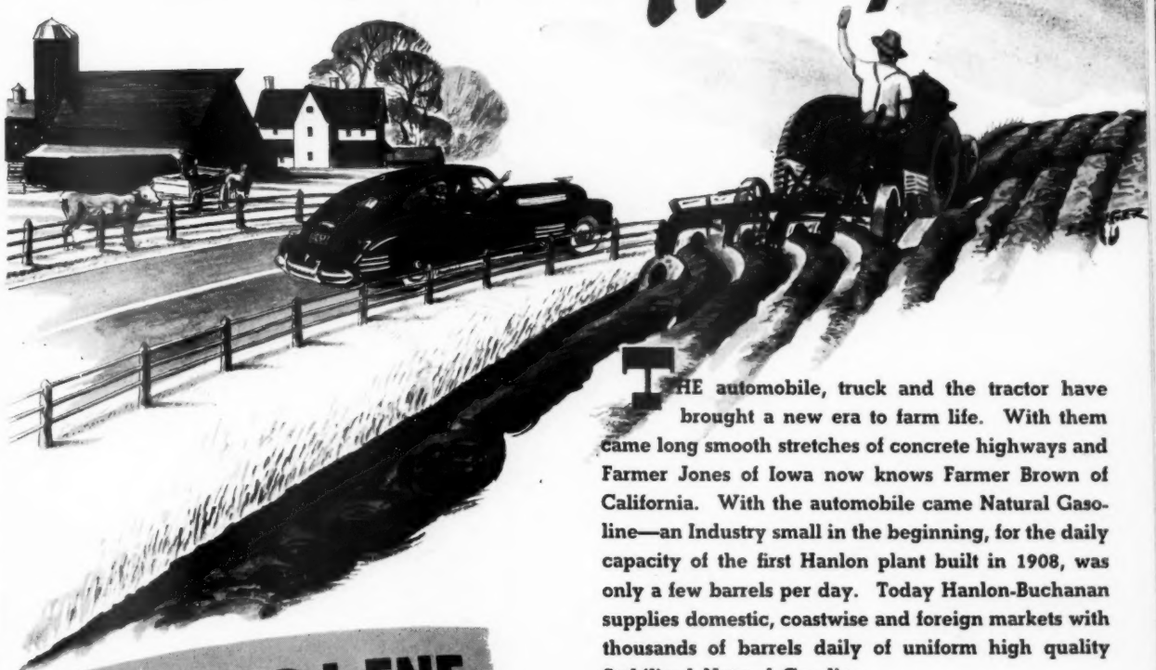

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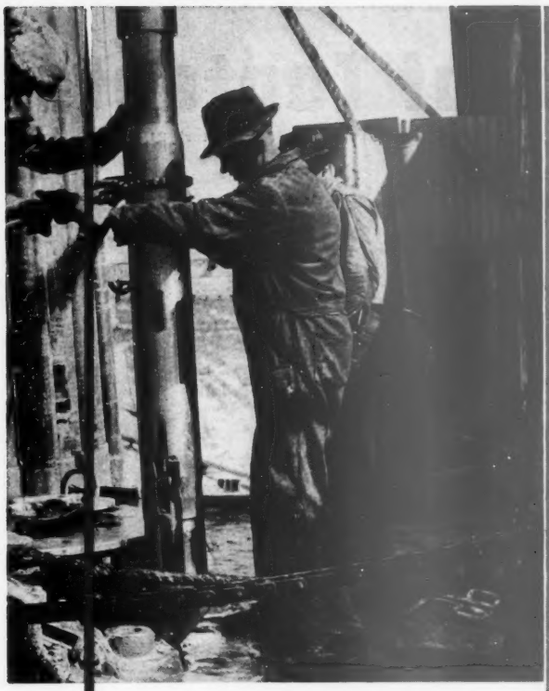

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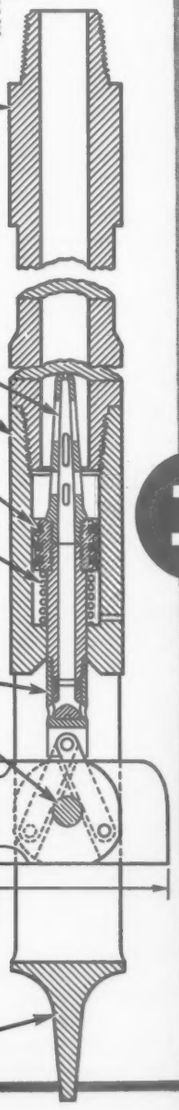

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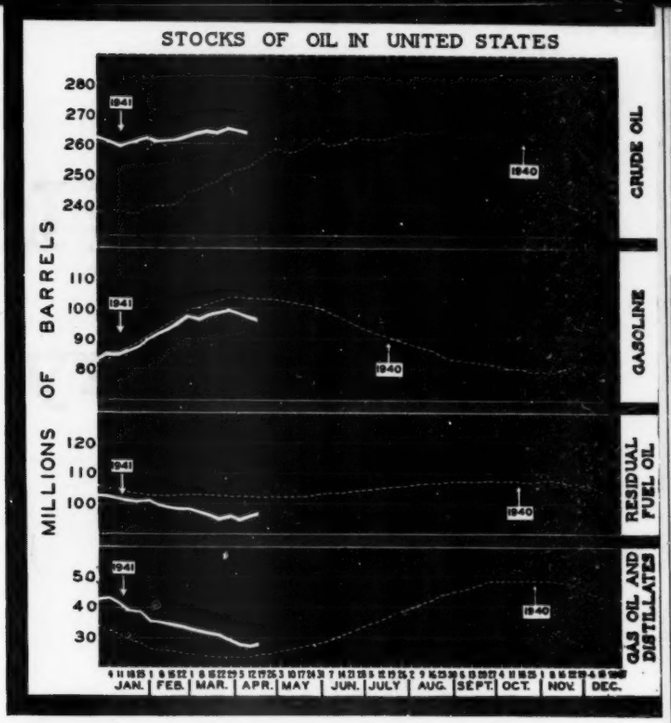
Trends

Advances in Fuel Markets Parallel Those of Gasoline



INDICATIVE of the basic strength underlying the recent upturn in the industry's markets, advances in the heavy grades of fuel oil are closely paralleling the higher quotations for gasoline. The most important advances of the week were a 10-cent increase in bunker-fuel-oil quotations at Atlantic seaboard points and a 5-cent increase at Gulf Coast refineries and terminals. The new East Coast price is $1.35 per barrel for Bunker C, basis New York Harbor, and the new Gulf Coast quotation is 85 cents per barrel. Last year due to restricted exports, increased imports and higher tanker rates on coastwise domestic shipments, the East Coast bunker-fuel-oil price dropped from a high of $1.50 to a low of $1.15 per barrel. Gulf Coast prices during that period decreased to 60 cents.

The advances in coastal fuel-oil quotations have followed the increases at interior points. At this time, the lowest-gravity grades of commercial fuel oil in Oklahoma are quoted at 70 cents per barrel in contrast to a price of 45 cents a year ago. The improvement in fuel oil at Middle West refineries over the past several months has been comparable to that in the Mid-Continent. A heavy industrial demand from the defense industries with large railroad, marine, and public-utility consumption explains the price increases at many refining centers.

The fuel-oil-inventory position is stronger in California than in any other area and there have been important advances in quotations there since the first of the year. As revealed in the accompanying table and chart fuel-oil stocks at this time are approximately 7 million barrels under a year ago. This decline is entirely accounted for by a 10-million-barrel decrease in California. Due to this inventory drop prices on low-gravity crude oil were recently advanced in California and drilling programs have been inaugurated to increase the output of crudes which give the largest yields of fuel oil.

It is not believed that imports will be the bearish factor in coastal fuel-oil quotations that they were last year. It was announced this week that the tariff-rate quotas of the principal importing countries—Colombia, Venezuela and the Netherlands West Indies—have been allocated for the year with shipments from these countries the first 2 months equal to about 17 per cent of the yearly totals. Fuel-oil imports within the quotas pay a tariff of ¼ cent per gallon with an increase to ½ cent per gallon on imports in excess of the quota. Reports reveal that Mexico has already imported a large part of its yearly quota. Several South American sellers have been able to develop new outlets for part of their output at points outside the United States thus relieving the pressure to increase import shipments here.

CRUDE PRODUCTION *3,755,125 bbl. daily average—up 127,670 bbl. One year ago 3,867,905 bbl.*

CRUDE STOCKS *265,160,000 bbl. as of April 12—down 380,000 bbl. One year ago 252,269,000 bbl.*

GASOLINE STOCKS **97,899,000 bbl. as of April 19—down 755,000 bbl. One year ago 103,622,000 bbl.*

RESIDUAL FUEL-OIL STOCKS *95,636,000 bbl. as of April 19—up 165,000 bbl. One year ago 102,603,000 bbl.*

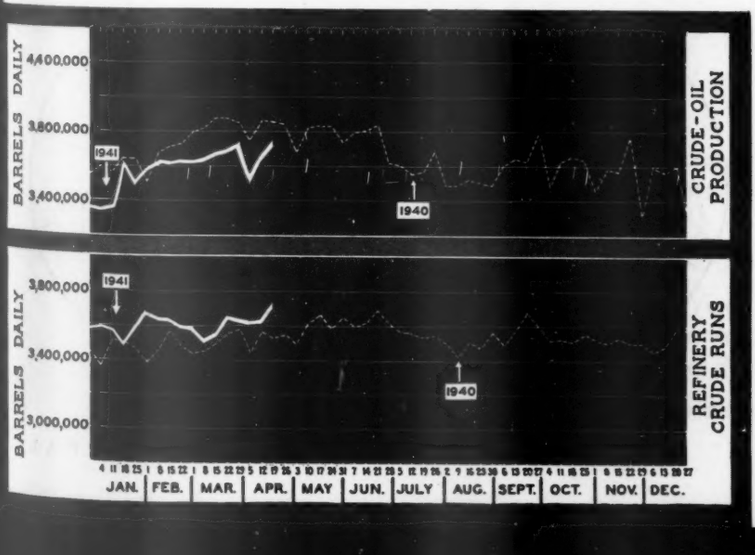
GAS OIL AND DISTILLATES *28,410,000 bbl. as of April 19—up 29,000 bbl. One year ago 24,290,000 bbl.*

REFINERY RUNS *3,705,000 bbl. daily week ended April 19—up 75,000 bbl. One year ago 3,535,000 bbl.*

*Includes 6,839,000 bbl. aviation motor fuel, up 143,000 bbl. Year ago 5,034,000 bbl.

DAILY AVERAGE PRODUCTION FOR WEEK

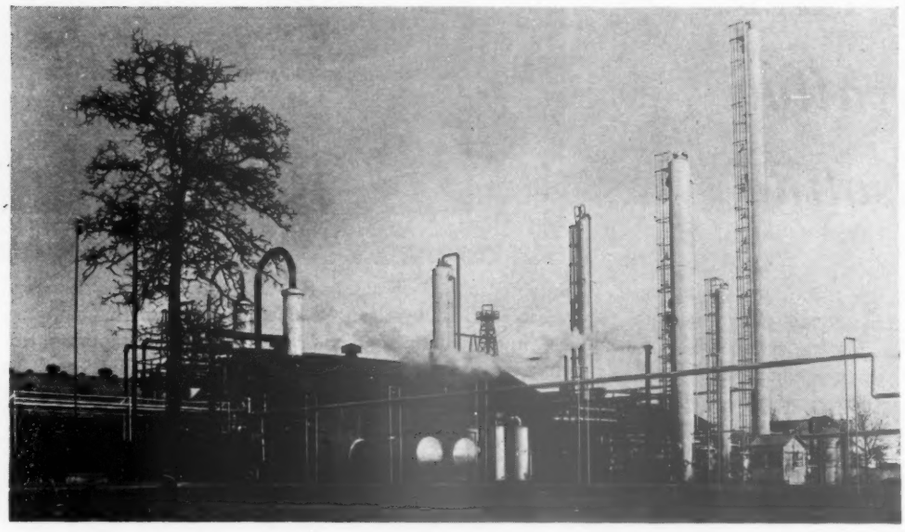
	Apr. 19, 1941	Bur. Mines Apr. est. of demand	April state allowables	Apr. 12, 1941
Arkansas	71,630	75,700	72,024	71,590
California	620,125	596,300	571,500	631,150
Eastern fields	119,200	124,400	.....	118,600
Illinois	324,165	336,000	.....	329,180
Kansas	218,500	200,700	210,700	206,950
Louisiana	307,880	299,700	300,893	303,195
North Louisiana	*69,580*	.....	.....	*70,595*
Louisiana Gulf Coast	*238,300*	.....	.....	*232,600*
Michigan	37,405	44,000	.....	36,885
Mississippi	22,750	20,300	.....	21,415
Nebraska	4,200	4,300	.....	3,950
New Mexico	110,320	109,000	110,000	110,330
Oklahoma	413,800	429,300	400,000	408,400
Rocky Mountain states	101,950	114,300	.....	103,660
Texas	1,403,200	1,355,300	1,325,291	1,282,150
East Texas	*374,450*	.....	.....	*374,359*
West Texas	*251,675*	.....	.....	*211,200*
North Central Texas	*132,550*	.....	.....	*129,900*
East Central Texas	*80,375*	.....	.....	*74,700*
Texas Panhandle	*80,625*	.....	.....	*80,600*
Texas Gulf Coast	*389,800*	.....	.....	*332,050*
Southwest Texas	*93,725*	.....	.....	*79,350*
Total United States	3,755,125	3,709,300	.....	3,627,455
Total production, January 1-April 19, 1941		367,543,951 bbl.		
Same period last year		382,382,858 bbl.		



Capacity of Liquefied Petroleum Gas Industry Twice Its Output

By D. H. STORMONT

A survey completed by The Oil and Gas Journal reveals natural-gasoline plants have a combined capacity for producing almost 2,000,000 gal. of liquefied petroleum gas daily. With consumption averaging over 900,000 gal. daily, this would indicate the industry was not materially overbuilt considering the wide seasonal variation in demand for liquefied petroleum gas.



Butane-propane recovery facilities were recently installed at this natural-gasoline plant in the Seminole field of Oklahoma. Other plants throughout the nation also underwent similar work during the past year

NATURAL-GASOLINE plants in the United States have existing facilities for extracting more than twice the volume of liquefied petroleum gas they are manufacturing at the present time. A study carried out in conjunction with The Oil and Gas Journal's annual survey of the natural-gasoline industry reveals that almost 2,000,000 gal. of butanes and propane could be recovered daily with existing equipment installed at the gasoline plants. Or annually, these plants could produce some 730,000,000 gal. whereas present output of liquefied petroleum gas is at the rate of slightly over 300,000,000 gal. yearly.

Based primarily on reports supplied by the individual companies, this survey showed that 166 of the natural-gasoline industry's 609 plants were equipped with liquefied-petroleum-gas (L.P.G.) recovery facilities. These plants are estimated to have a combined capacity for producing 1,995,350 gal. of L.P.G. daily.

This capacity is exclusive of facilities at refineries and recycling (condensate) plants. Refineries are, of course, a large source of butane-propane mixtures, but practically all of these materials produced in conjunction with refining operations are converted or blended into motor fuels at their source. Refinery-produced L.P.G., therefore, does not compete with material derived at natural-gasoline plants in supplying the domestic and industrial uses; it affects the gasoline-plant-produced L.P.G. mainly by filling a market that could be supplied by this outside source.

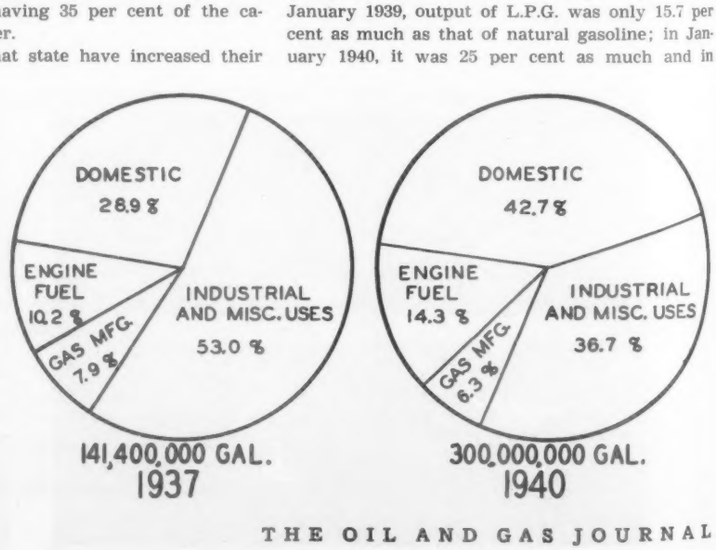
Results of this survey are summarized in the accompanying table showing L.P.G. capacity by states. Study of this tabulation shows distribution of L.P.G. capacity to a large extent correlates with that of natural-gasoline capacity, as might be expected. There are, however, some wide variations from this relationship, mostly in states where the plants are either much larger or much smaller than the industry's average-size plant. For the nation as a whole, the table reveals that of the industry's 609 plants with a combined natural-gasoline capacity of 11,275,985 gal. daily, 166 could produce 1,995,350 gal. of L.P.G. Or almost 18 per cent of the capacity is in the form of L.P.G. facilities.

43 Per Cent of Capacity in Texas

In capacity for manufacturing L.P.G., as in natural-gasoline capacity, Texas accounts for a substantial proportion of the total. As is shown in the table, that state's daily capacity is estimated at 857,550 gal. This capacity, representing the combined facilities of 58 plants, is 43 per cent of the nation's total. Thus Texas occupies a more prominent position in supplying demand for butane and propane than in natural-gasoline manufacturing, it having 35 per cent of the capacity for the latter.

How plants in that state have increased their daily output during the past 3½ years is shown in the accompanying chart, L.P.G. figures for which are based on Texas Railroad Commission figures. In August 1937, when the commission first segregated butane-propane output from that of natural gasoline, plants were producing about 200,000 gal. daily. Between then and the latter part of 1939, their combined output fluctuated from about that volume to 350,000 gal. daily. In September 1939, the state's production jumped to 11,273,000 gal. (376,000 gal. daily) and since then has tended to increase steadily. Peak production was reached in November 1940, when the state's production totaled 627,117 gal. daily. Most recent commission data available, for January of this year, showed that state's total L.P.G. production to be 599,645 gal. daily.

Also plotted on the chart with Texas' daily L.P.G. production is the state's monthly output of natural gasoline. Comparison of the two curves reveals that in general their trend is practically the same during this 3½-year period. In January 1939, output of L.P.G. was only 15.7 per cent as much as that of natural gasoline; in January 1940, it was 25 per cent as much and in



The charts at right show how production of liquefied petroleum gas in 1937 and 1940 was consumed. Chief changes are in the percentages consumed by the bottled-gas industry and in industrial use

LIQUEFIED-PETROLEUM-GAS MANUFACTURING CAPACITY OF NATURAL-GASOLINE PLANTS BY STATES

	Daily L.P.G. capacity (gal.)	Daily natural-gasoline capacity (gal.)	Total No. gasoline plants	No. plants producing L.P.G.
Arkansas	22,000	120,000	9	3
California	312,000	3,033,500	96	27
Colorado	.....	7,000	2	..
Illinois	105,000	151,790	26	4
Kansas	68,000	378,500	14	6
Kentucky	700	51,500	3	1
Louisiana	95,000	609,000	28	7
Michigan	1,000	25,000	3	1
Montana	3,000	7,000	1	1
New Mexico	88,000	352,000	7	5
Ohio	.....	48,640	11	..
Oklahoma	363,700	1,912,050	105	36
Pennsylvania	13,400	143,245	73	8
Texas	857,550	3,949,800	144	58
West Virginia	46,000	348,860	80	6
Wyoming	20,000	138,100	7	3
Total	1,995,350	11,275,985	609	166

this year was 29.5 per cent. Thus, prior to 1940 the increase in L.P.G. production was largely due to a direct increase in the recovery of L.P.G. fractions, rather than to the higher rate of natural-gasoline manufacturing. During the past year the reverse is largely true; i.e., the percentage recovery of butane-propanes did not increase in proportion to the gain in L.P.G. output.

East Texas Is Outstanding

Over five-sixths of Texas' L.P.G. output is confined to East Texas and the Panhandle, with the former's production more than doubling that of the Panhandle. Due to two pipe lines providing a direct outlet to Gulf Coast refineries for these fractions, nearly all of the East Texas field's 17 plants are provided with butane-propane recovery facilities. East Texas plants now are producing about 365,000 gal. daily, with the bulk of the output finding its way to the Gulf Coast through these lines. The production of the various Texas districts during January of this year was:

Area and district—	Production (gal. daily)
Southwest, 2	3,254
Gulf Coast, 3	23,010
Southwest, 4	10,026
Eastern, 5 and 6	365,584
West Central, 7	18,286
West Texas, 8	17,828
North Texas, 9	11,709
Panhandle, 10	149,948
Total	599,645

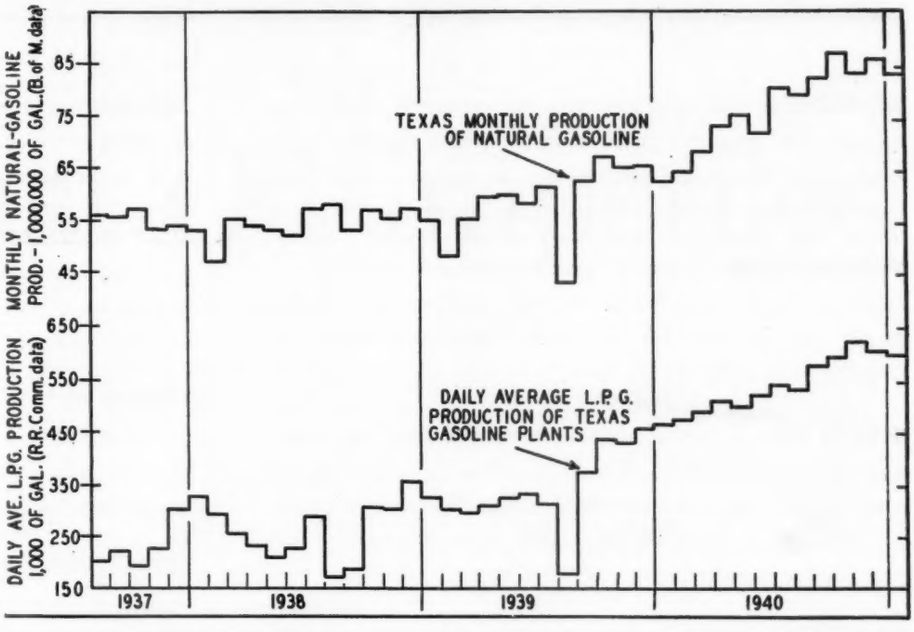
Oklahoma is second in L.P.G. capacity, 36 of its 105 natural-gasoline plants being equipped to recover 363,700 gal. daily, while California is third in L.P.G. facilities with a capacity of 312,000 gal. daily. This is in contrast to what might be expected, as California has a natural-gasoline capacity of 3,033,500 gal. daily as compared to Oklahoma's 1,912,050 gal. daily. In California, however, most of the raw natural gasoline is blended and shipped in crude-oil lines direct to refineries, or in some instances is shipped to refineries where the butane-propane fraction is then removed. These practices, of course, tend to reduce the volume of L.P.G. produced at the natural-gasoline plants.

Some 16 companies are manufacturing L.P.G. in California, operating 27 plants with a combined L.P.G. capacicy of 312,000 gal. daily. Actual production of butane-propane fractions in that state varies from about 3,000,000 to 5,000,000 gal. monthly; the Bureau of Mines report for February of this year showed natural-gasoline plants produced 165,000 gal. daily. In addition to this amount, refineries recovered 115,700 gal. daily.

Illinois, which ranks eighth in natural-gasoline plant facilities, holds fourth place in L.P.G. capacity. Only 4 of the state's 26 plants are equipped with butane-propane recovery equipment, but these are all relatively large plants so that their combined L.P.G. capacity totals 151,790 gal. daily. Fifth and sixth in rank in L.P.G. capacity are Louisiana and New Mexico, with Kansas being next in line. These states each have less than eight plants equipped with L.P.G. recovery facilities, but in most instances the plants have large gas throughputs so that their L.P.G. capacities average over 10,000 gal. daily.

The L.P.G. capacities of the remainder of the states having gasoline plants are also shown in the accompanying table. Capacities of the individual companies for producing L.P.G., as reported by the companies, are shown in the personnel list beginning on Page 76 of this issue.

Production of liquefied petroleum gas during 1940 reached a new peak according to G. G. Oberfell.* annual production being 300,000,000 gal. as compared with 223,580,000 gal. in 1939. This 32.5 per cent increase followed a 35.3 per cent gain in the previous year, and was due largely to higher consumption in the domestic market.



Texas natural-gasoline-plant operators during the past 3½ years have increased their output of butane and propane from 200,000 gal. daily to around 600,000 gal. daily

ADDITIONAL N.G.A.A. FEATURES

- **Text of the president's annual address before the association—Page 37.**
- **Abridged versions of addresses on position of natural gasoline in defense program and on the numerous chemicals now being recovered — Pages 39-43.**
- **Report on research work in vapor-pressure determinations and conclusions reached—Page 50.**
- **Report on revised charcoal adsorption-test code as now approved by the technical committee—Page 54.**
- **Annual survey of natural-gasoline plants and their personnel—starting Page 76.**

In the utilization of butanes and propanes, and the relatively small volume of pentanes sold commercially, bulk of these products are consumed in the bottled-gas industry and as industrial fuel. The accompanying charts, based on Bureau of Mines data and statistics given in the article by Oberfell, show the percentages of L.P.G. consumed in its various uses in 1937 and 1940. These reveal that consumption of L.P.G. in the domestic market increased from 28.9 per cent of the total output in 1937 to 42.7 per cent in 1940, industrial and miscellaneous uses declined from 53 to 36.7 per cent, volume used as engine fuel increased from 10.2 to 14.3 per cent, and consumption of L.P.G. in gas manufacturing declined from 7.9 per cent in 1937 to 6.3 per cent of the 1940 total.

Thus it is readily apparent that future of the liquefied-petroleum-gas industry depends to a large extent on its ability to compete as a fuel for domestic usage and for industrial heating and manufacturing processes. In the bottled-gas market, the industry now is supplying an estimated 1,125,000 retail customers. In this market, territory in which butane and propane can compete with other fuels most advantageously has already been extensively exploited. The remaining areas offer handicaps either in sparse population or difficult competition with other fuels, but it is expected that future years will register a continued rapid increase in the domestic use of L.P.G. As an industrial fuel, the accelerated pace of industry so far this year indicates L.P.G. consumption in this use will again register a large gain.

An article dealing with The Oil and Gas Journal's annual survey of natural-gasoline plants is given on Page 47 of this issue.

*The Oil and Gas Journal, p. 17, Jan. 2, 1941.

SPARKS . . . FROM THE NEWS

REWARD: Operators who spent time and money telling the Cole subcommittee about the oil business got their reward last week when the chairman and another member announced that they were not in favor of federal control of the industry.

MORE BOTTOMS: The tanker-construction program under way in the United States, assuming all the boats would fly the U. S. flag, would bring the country's total tanker fleet to 500 vessels, the largest by far of the world's fleets.

GOLDEN EGG: As tax committees in various state legislatures cast about for sources of additional revenue, petroleum and its products seem destined for further burdens. The industry is willing to bear its share of defense taxation, but it wonders if it isn't threatened with the role of the fabled golden goose.

NO WEEPING: Refinery groups are meeting this month under the most favorable operating conditions in several years. The usual cause for weeping is conspicuous by its absence.

PER CAPITA SPACING: A recent survey of the Hawkins townsite in eastern Texas indicates that there will soon be one well for every five inhabitants.

DOUBTFUL VALUE: The Germans may take the near eastern oil fields. But if they do it will be like buying a car without a motor. No facilities to make it useful.

NO BOUNDARIES: With Mississippi lime and Simpson production becoming increasingly important in western Texas visiting Oklahoma geologists feel right at home.

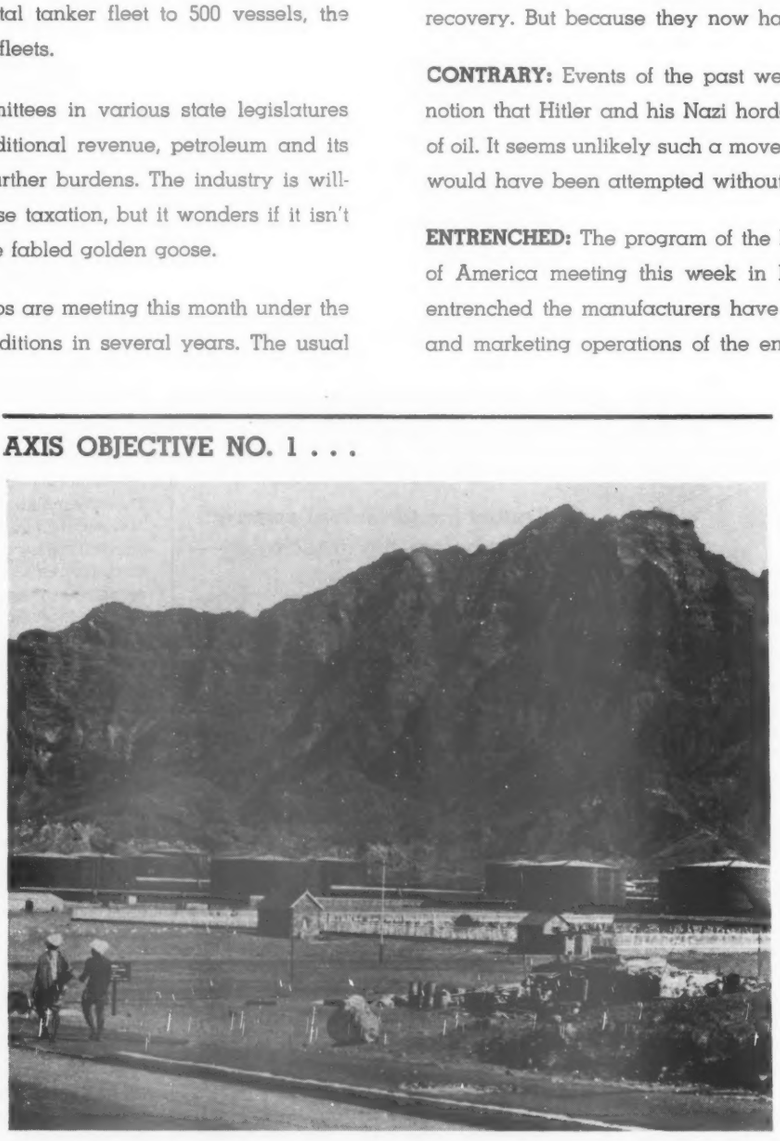
REECHO: Memories of the madcap days of Seminole reechoed in Oklahoma when a big well from the Wilcox came in 10 miles west of the Greater Seminole area.

UGLY DUCKLINGS: There was a time when natural-gasoline operators drove butanes and propanes from their products as undesirables. This week in Dallas they are studying their recovery. But because they now have premium values.

CONTRARY: Events of the past week would seem to refute the notion that Hitler and his Nazi hordes are faced with a shortage of oil. It seems unlikely such a move as was made on the Balkans would have been attempted without a plentiful oil supply.

ENTRENCHED: The program of the Natural Gasoline Association of America meeting this week in Dallas reveals how strongly entrenched the manufacturers have become in the technological and marketing operations of the entire industry.

AXIS OBJECTIVE NO. 1 . . .



Tank farm and pump station on the Iraq pipe line, a link in the system that feeds Kirkuk field oil to the eastern end of the Mediterranean. Axis powers have long coveted this supply of petroleum. This week's Balkan developments sharpen the focus of German designs on the near eastern fields of Iraq, Iran, Bahrein Island, Arabia and Egypt

NOT OUT OF STEP: A geologist hastens to advise that the current interest of his profession in nonconformities should not be construed as subversive activity.

DRILLING: A statistician points out that a well is completed in the United States every 22 minutes and a total of 1,200 miles —the distance between St. Louis and Boston—is drilled monthly.

GROWTH: The natural-gasoline industry, including the production of liquefied gases as revealed in the survey in this issue, is growing steadily with capacity for further expansion.

Haifa Bay, the terminal of the southern leg of the Iraq pipe line which is being threatened by German advances in the Balkans and east along the northern coastline of Africa

Near East Oil Imperiled

By J. P. O'DONNELL

NEW YORK, Apr. 22.—The gamble which Hitler took when he sent his troops into Yugoslavia and against Greece can be accepted as evidence that the Nazis are confident that they face no immediate shortage of oil. By invading Yugoslavia, through which the Danube flows from Germany, the Nazis temporarily sacrificed complete control of the river, an important traffic artery, particularly for the transportation of Rumanian oil. Had Germany's oil needs been acute, she could hardly have jeopardized her major source of supply by expanding the Balkan war theater.

The latest developments in the Balkans have, if anything, improved Germany's oil position by lengthening the distance between Rumania and the nearest Allied air bases. Before the lightning German attack cleared eastern Greece, the important Danubian oil port of Giurgiu was only 160 miles north of Greece's northeastern border. Two weeks after Germany invaded Greece, the British-Greek front line was 360 miles from Giurgiu. Ploesti, Rumanian refining center, is even more distant. While oil men acquainted with Rumania are at a loss to explain failure of the R.A.F. to bomb refineries and transportation facilities there, military authorities say that airfields in Thrace were not adequate for handling anything heavier than light bombers which would not have been effective against oil objectives without protection even at the shorter distances.

Move to Unblock River

While Germany gave evidence that she could withstand at least a short stoppage of river imports from Rumania, her armies moved immediately to relieve this problem. One German army moved southwest from Rumania to Belgrade, another moved northwest from Sofia and a Hungarian force moved south to isolate that part of Yugoslavia through which the Danube flows. However, Yugoslavs, before surrendering are reported to have dynamited the narrow Iron Gate. According to press reports damage was sufficient to block the river for 3 months. If true, this feat may be one of the most severe blows the Nazis suffer in the Balkan invasion.

In addition to having increased the security of Rumanian oil facilities from R.A.F. attacks, Germany has also apparently forced the British air force to a defensive type of warfare and thereby relieved attacks on her synthetic plants. During the entire fall and winter Britain's department of economic warfare concentrated air attacks on synthetic-oil plants in Germany. The R.A.F. has apparently abandoned such attacks. In its "Chronology of February R.A.F. Attacks on Nazi Oil Objectives," the Petroleum Times of London does not mention specifically a single synthetic plant. If the British have abandoned this phase of aerial warfare it might be regarded as an indication that either they now view such attacks as futile or that bombing of other targets, such as submarine bases, is more imperative. On the other hand, well-qualified observers remain confident that Germany is feeling the pinch of oil shortage.

New Russian Pact Reported

It was also reported last week that Germany had concluded a pact with Russia whereby the Soviet Republics were to supply the Nazis with 1,000,000 bbl. of oil. From the inconclusive reports available on Russian production, it does not seem possible that the Soviets have an exportable surplus of this magnitude but strict regulation of consumption plus possibly increased production might make it possible. Germany must also be getting a fair share of Hungary's expanding production, reportedly now in excess of 6,000 bbl. per day and above curtailed domestic needs. Despite this apparent excess, private motoring was suspended, effective April 20, so that some of the oil must be going to Germany. Further curtailment has also been effected within the Axis, Italy having reduced gasoline rations by half, effective April 10, the third in that country this year.

With German forces on the western border of Turkey and active in Libya the oil fields of the Near East again loom as a probable Axis objective. Only Turkey now bars the path of the German Balkan army to northern Iraq and Persian Gulf fields which Hitler must covet not only because their oil is desirable to the military aims but because their loss would be a blow to Great Britain's eastern Mediterranean operations. Britain recognized this danger by landing troops at Basra, Iraq's Persian Gulf port.

If Germany does move into Iraq, and it seems certain that she so intends since she officially describes both Greece and Libya as "individual sectors in the Mediterranean plan," Great Britain's near eastern military and naval forces will lose a vital oil supply. Need for tankers has forced the British to depend largely on the Western Hemisphere and shorter tanker routes. Loss of Iraq would halt shipments of crude via part of the Iraq Pipe Line Co.'s 1,152-mile system from Kirkuk to Haifa, Palestine, location of the unfinished refinery of Consolidated Refineries, Ltd. This refinery has been operating as a topping plant since the beginning of the war which started before planned cracking facilities had been installed. It is believed that its fuel-oil production has been an important factor in supplying the British eastern Mediterranean fleet.

The southern leg of the line has been reported shut down but, according to the best information available, interruptions have been temporary due to causes other than the war. The northern leg with its terminal in Tripoli, Syria, has been shut down since last summer following the fall of France under whose mandate Syria is governed.

The possibility of Hitler's being able to utilize Iraq oil if an invasion is successful is regarded as remote. Theorists, however, see two possibilities of the oil being made available to Germany. According to one it would be possible for Nazi engineers to take up the pipe lines to the Mediterranean and relay them to the Black Sea. While the mountainous character of eastern Turkey with peaks of 10,000 to 13,700 ft. appears to be a great barrier, it is pointed out that the line could follow the Tigris River to Diyarbekir and then existing railroads to the Black Sea port of Samsun. From that terminal the oil would be transported to eastern Black Sea ports by tankers, a number of which are reported to be laid up in the Rumanian port of Constantza.

Building Rumanian Line

This theory was probably suggested by the fact that German engineers have taken 300 miles of 12-in. pipe, scheduled to be used for a line to transport gasoline from Donges, near St. Nazaire, to Montargis, France, and are now building a new Rumanian line with it. The 1,152 miles of pipe line and the 11 pump stations with their 45 pumping units comprising the Iraq system would be ample for a line to the Black Sea. Parallel lines now extend from Kirkuk to Haditha, west of the Euphrates, where the lines separate. Three stations, each with six sets of pumps, serve the double line and five stations on the southern leg to Haifa and four on the northern leg to Tripoli serve the single lines.

These assumptions are based on the possibility of the Nazis acquiring the fields intact. However, there are unconfirmed rumors than preparations, similar to those taken in the Dutch East Indies, have been made to destroy near-eastern fields if a German invasion is successful. Whether or not the accession of a pro-Nazi government in Iraq has forestalled such a plan if it actually exists remains to be seen.

Refiners Voice Optimism; Report Brisk Demand for Products

By W. T. ZIEGENHAIN

HOT SPRINGS, Ark., Apr. 22.—The twenty-ninth annual meeting of the Western Petroleum Refiners Association here last week was probably the first in history to reflect no sales difficulties among its members. Instead, the several speakers who offered their versions of the Mid-Continent market position agreed that demand for their products is satisfactory and general optimism prevailed regarding the immediate market outlook.

Concern was in evidence, however, regarding the demands which might be placed upon the Mid-Continent refining industry as a result of expansion of the national preparedness program. Its plants are well scattered and it has ample facilities to expand the output of various products. All that appears to be needed is the word to produce. This situation was outlined in the message of C. L. Henderson, reelected president of the association and also president of the Vickers Petroleum Co., Wichita, Kans.

"In the Mid-Continent field," he said, "we are producing a large volume of excellent fuels and lubricants. During World War No. 1 many trainloads of our products moved to the Atlantic seaboard for export. We cannot yet anticipate the volume that will be required in the immediate future, for we do not know what the future holds for us, but the members of this association are already prepared, whatever may be the requirements of national defense and of an expanded domestic commerce."

Considers National Aspects

Then turning to the national refining statistical position, Mr. Henderson continued:

"An inventory of the petroleum industry's facilities reveals its outstanding preparedness for any emergency, in peace or war. Briefly, its supplies of crude oil are adequate, its refining and storage capacity which is more than sufficient for all commercial demands is rapidly being made equal to any special war-time requirements. Its transportation facilities likewise are more than equal to current requirements, and are being extended to anticipate future needs.

"Coming to specific refinery products, there is substantial excess capacity available for the building up of a reserve of 100-octane gasoline for possible war demand and a substantial start in this direction has recently been made by the Army and Navy. Industry stocks and underground reserves of heavy fuel oil are more than adequate for a naval war in the Pacific.

"The petroleum industry is surprisingly free of bottlenecks and even those which now appear can readily be taken care of in one or more ways. Moreover, we shall be able to eliminate bottlenecks in other industries—as in supplying toulene for TNT and synthetic rubber.

Western Hemisphere Supreme

"On the broad front, the production of crude petroleum in the Western Hemisphere gives an assurance of supply beyond anything that can be hoped for in Europe or Asia, no matter what power or powers may control those continents. In this hemisphere crude oil was produced in 1940 at the rate of 4,558,000 bbl. per day (78 per cent of world production) as against 1,304,000 bbl. per day for all the rest of the world.

"Turning to the European war, the petroleum supply at points of conflict may decide the result. Germany probably has adequate supplies of gasoline for military purposes although supremacy of combat in the air will go to planes using 100-octane gasoline, a fuel we alone can supply in large quantities. We are informed, however, that the real crisis will come in the means of transportation. Prolonged storage is hazardous and unlikely, due to the efficiency of British bombing. Germany's transportation facilities probably cannot supply a prolonged offensive, even without interference."

Following Mr. Henderson's remarks, John C. Day, secretary of the association, offered a detailed summary of the year's work. He said in part:

"Last spring we revised the Digest of State Inspection Laws in such a manner as to give more information in a more compact and concise way, and at the same time added a digest of state gasoline-tax laws, covering gasoline excise or license taxes. We had so many requests for the latter that we felt it would be a very valuable service to our members. Copies have been furnished to each state tax and inspection department.

"Several states have contacted our offices for suggestions when they contemplated making additions or revisions to their own laws. In this way they received the benefit of the experience of other states on similar problems. The association has given assistance in each instance and has had some success in having its recommendations adopted. For instance, the association has advocated a higher sulfur content for tractor fuel than for gasoline, and some states have increased the allowable sulfur to as high as one-half of 1 per cent on tractor fuels, and 0.2 to 0.25 for gasoline.

"Last year our association believed that an established method of knock testing should be adopted, so at the annual meeting at Wichita, Kans., April 1940, the A.S.T.M. method of knock testing was adopted. This action has had a standardizing effect and it is believed that it has brought about some economies in manufacturing. The motor fuels and technical subcommittee is studying the results and will meet periodically and report any significant changes in motor-fuel octane values.

"The one research problem of last year was the study of automatic chokes on automobiles. A special committee was appointed to study this particular problem. The committee realized that the field work had to be done during cold weather, especially under 45° F., so as to be able to get as much data as possible.

Routine Operations Advised

Whether Mid-Continent refiners are called upon to continue to supply the normal products from petroleum or equip plants for the recovery of bases for the manufacture of synthetic rubber and trinitrotoluene is a matter for further developments to determine. A strong suggestion was made by each of two outstanding authorities that the routine business of supplying the ordinary petroleum products be maintained as uniformly as possible. In this way, each contended, the industry could most effectively serve the defense program.

The speakers making the suggestion were Paul G. Hoffman, president of Studebaker Corp. and Col. Willard Chevalier, publisher of "Business Week." These were augmented by a discussion of world affairs by Prof. Henry M. Busch of Western Reserve University. Mr. Hoffman spoke in the general session immediately following a conference of automobile manufacturers in Washington. Professor Busch appeared on the association's program 3 years ago and many of his predictions made then on world events since have developed.

IN MEMORIAM

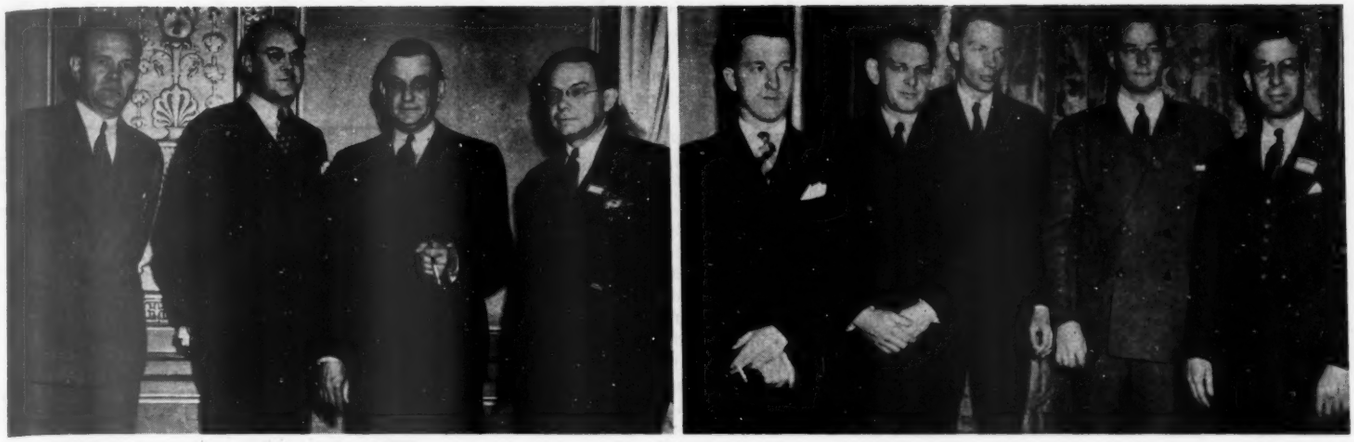
In the course of the general session on Friday, Fayette B. Dow of the association's Washington office read a series of resolutions prepared by the board of directors in their meeting the previous day. Four of these called to mind the deaths of important members in the past year, including W. T. Atkins, W. D. Richardson, Jack Vickers and C. W. Manville.

Following this Mr. Dow read a resolution thanking the 50 equipment and refinery-service companies for the entertainment supplied in the form of dances, an Arkansas party and a lunch. Another resolution thanked the Ethyl Gasoline Corp. for its elaborate buffet lunch and entertainment given the first night of the convention.

NEW DIRECTORS

Officers and directors of the Western Petroleum Refiners Association for the coming year will be substantially the same as those who so successfully guided the association over the past year. C. L. Henderson, president and general manager of the Vickers Petroleum Co., was reelected president, with R. W. McDowell, vice president of the Mid-Continent Petroleum Corp.; C. W. Cahoon, Jr., president and general manager of the Olney Oil & Refining Co.; T. M. Martin, executive vice president of the Lion Oil & Refining Co., and H. E. Zoller, executive vice president of the Derby Oil Co., each reelected a vice president of the association.

Four new names appear among the list of directors, however, the number having been increased by three and one represents a replacement. The new directors are: T. A. Helling, vice president and general manager of the El Dorado Refining Co.; Rex H. Winget, vice president and general manager of the Cushing Refining & Gasoline Co.; Paul Ryan, president of the National Refining Co., and P. E. Lakin, vice president of the Shell Oil Co., Tulsa, replacing Alexander Fraser, president.



Left: F. E. Eckert, Hanley & Bird, Bradford, Pa.; O. W. Van Petten, Columbian Carbon Co., Charleston, W. Va., new chairman of the eastern division; F. M. Brewster, Belmont Quadrangle Drilling Corp., Bradford, Pa., and M. G. Gulley, Gulf Oil Corp., Pittsburgh, Pa. Right: W. C. Goggin, Dow Chemical Co., Midland, Mich.; R. B. Anderson, Columbian Carbon Co., Charleston, W. Va.; P. A. Dickey, Pennsylvania Topographic and Geologic Survey; W. P. Smith, G. L. Cabot, Inc., Charleston, W. Va., and John Thompson, Belmont Quadrangle Drilling Corp., Bradford, Pa.

Secondary Recovery Stressed at Pittsburgh A. P. I. Meeting

By A. C. MacINTYRE and HARRY F. SIMONS

PITTSBURGH, Pa., Apr. 22.—The growing importance of secondary recovery to the oil industry was emphasized when one of the four sessions of the annual meeting of the Eastern district, Division of Production of the American Petroleum Institute, held here last week, was devoted almost entirely to that phase of production. Progress and developments in secondary recovery in Pennsylvania, Illinois, West Virginia and Ohio were reviewed.

In the other three sessions problems in other departments of the oil and gas industry were discussed.

Five hundred registered for the meeting, including 80 students.

Van Petten New Chairman

O. W. Van Petten, of the Columbian Carbon Co., Charleston, W. Va., was elected chairman of the district for the coming year. Vice chairmen include: M. G. Gulley, Gulf Oil Corp., Pittsburgh; W. E. Ferguson, Ohio Fuel Gas Co., Columbus, Ohio; M. E. Joy, Cities Service Oil Co., Mount Pleasant, Mich.; R. E. Damp, Carter Oil Co., Mattoon, Ill., and A. C. Simmons, Bradford, Pa. Virgil F. Boyer, Peoples Natural Gas Co., Pittsburgh, was named secretary-treasurer.

The advisory committee is composed of: J. J. Schmidt, East Ohio Gas Co., Cleveland, chairman; J. C. Askam, A. H. Bell, F. A. Benckert, S. J. Brendel, F. M. Brewster, P. H. Curry, Forest D. Dorn, F. E. Eckert, I. W. Hartman, K. C. Heald, D. S. Keenan, R. B. Kelly, W. C. Kneale, H. J. Lowe, Alex McCandless, W. L. McCloy, J. G. Montgomery, Jr., J. H. Newlon, E. V. O'Rourke, Christy Payne, Jr., S. J. Pirson, John Post, Paul H. Price, D. T. Ring, E. G. Robinson, J. French Robinson, Frank Schauer, E. N. Smith, L. L. Tonkin, O. W. Van Petten, H. A. Wallace, Jr., and Don Wilson.

Air and Gas Drive

The paper by Robert B. Bossler, of the Brundred Oil Corp., Oil City, Pa., and Parke A. Dickey, of the Pennsylvania Topographic and Geologic Survey, on "Oil Recovery by Air and Gas Drive in Pennsylvania," a continuation of a paper presented by the same authors at the A.P.I. meeting at Chicago in November 1940, attracted considerable attention.

The volume of oil obtained by intensive air drive, using geometrical patterns and close well spacings in two leases in Venango were set forth. Mathematical relation between well spacing and ultimate recovery was discussed in the paper. An effort was made to set up a formula, based on recoveries, that will determine the optimum number of new wells to be drilled in air-drive development.

C. C. Hogg, of the National Petroleum Co., Titusville, Pa., in discussing the paper, pointed out that preliminary injection of air into the sand before the producing wells are pumped, usually results in increased recovery at the outset of the development. The production-decline curve generally assumes the normal course of the primary recovery, with the increase in production usually being greater in the beginning than it is in primary production. Royalty costs should be considered in assessing the economic aspects of secondary recovery, Mr. Hogg said.

Results of Air Drive

Results of intermittent application of air in secondary recovery in experiments conducted by the National company were discussed. The operation brought about an increase of more than 400 per cent in a period of 62 weeks, compared with a similar period under continuous repressuring. The method used was more successful, Mr. Hogg said, in sections where vacuum had been previously used or where considerable difficulty has been experienced with channeling and bypassing.

In his discussion of the paper, M. G. Gulley, of the Gulf Oil Corp., Pittsburgh, expressed the belief that money could be saved by making an engineering inyestigation of the project before the development was started.

William Byers, of the Dymo Oil Corp., Spencer, Ohio, in speaking on "Secondary Recovery by Water-Flooding Method in Chatham Field, Medina County, Ohio," said that recovery on several of the floods at the end of 18 months is estimated at about 75 bbl. per acre foot. In the better territories it is estimated, he said, that final recoveries of from 150 to 225 bbl. per acre foot may be experienced.

Economics Govern in Ohio

Unless the economic position for Ohio crude improves greatly the future of secondary recovery in that state does not look bright, was the conclusion of J. E. Schaeffer, East Ohio Gas Co., Cleveland, Ohio, in a paper on "Secondary Recovery in Ohio."

Secondary recovery in West Virginia was reviewed by E. T. Heck, assistant geologist of the West Virginia Geological Survey of Morgantown, W. Va. Mr. Heck emphasized that in view of the recoveries of between 1,250 and 1,700 bbl. per acre, original wells should not be abandoned until secondary-recovery possibilities have been investigated.

Illinois operators have made use of vacuum, water flooding, and gas repressuring in the old fields for some years and each of these methods of secondary recovery is being tried to some extent in the new fields that have been discovered since 1936, according to a paper on "Secondary Recovery of Oil in Illinois," by Alfred H. Bell and Frederick Squires, of the Illinois Geological Survey. Of particular significance are the possibilities of water flooding and gas repressuring of

the McClosky lime in addition to the sand horizons.

Hydrocarbon Leakage Measured

Sylvain J. Pirson, head of the department of petroleum engineering, Pennsylvania State College, State College, Pa., advanced a method of prospecting for oil in which the rate of leakage of hydrocarbon gases and vapors to earth's surface is measured. Units used to express the rate of escape include cubic feet of gas per square mile per year, rate of pressure buildup, or molecules of gas per unit area. Differences in the concentration of the leakage gases show whether the accumulation is oil or gas and the depth of the pay zone.

John Thompson, of the Belmont Quadrangle Drilling Corp., Bradford, Pa., reviewed the Oriskany sand fields in the four states—Pennsylvania, West Virginia, New York and Ohio—in his paper "Oriskany Depletion and Resulting Practices." He outlined the steps taken to meet the depletion in that field.

The use of combination rotary and cable-tool rigs in Michigan came about through trial and error due to the thickness of the glacial beds, and other difficult drilling conditions, Henry G. Hunt, of the Lupher Drilling Co., Fairfield, Ill., told the gathering. (See Page 65 in this issue.)

Illinois' Costs Reduced

In a "Review of Illinois Drilling Practices," A. F. Lager, of the Siosi Co., Terre Haute, Ind., described new methods and equipment which have reduced drilling costs from 25 to 40 per cent below the figures for early stages of development. It is safe to predict, the speaker said, that most Illinois rigs in the future will be equipped with automatic timing and sampling devices. In citing steps taken to reduce costs, he listed rebuilding of tool joints, field-applied tool joints and others which appear to be small in themselves, but "their effect in the aggregate is enormous."

In discussing the paper, R. E. Damp, of the Carter Oil Co., Mattoon, Ill., said that tool-joint wear is more serious in the central and southern portions of the basin, due to the hardness and abrasiveness of the formations and to the use of increased bit weights. Considerable work has been done in developing drilling muds. It has been found, he said, that a fluid with a viscosity of 35 seconds A.P.I. and weight of 9 lb. per gallon with a low filtrate is suitable.

Southwestern Michigan, without any important discoveries in 1940 benefited by worthwhile extensions of previously discovered pools, Kurt H. de Cousser, of the Socony-Vacuum Oil Co., Inc., Lansing, Mich., said in reviewing that area.

Eastern Deepening Problems

Some of the difficulties encountered in deepening wells from the Oriskany to the Clinton sand in West Virginia were described and some suggestions to meet such problems were outlined in a paper by R. B. Anderson, of the Columbian Carbon Co., of Charleston, W. Va. He described ways to prepare the hole for deepening and also the type of tools used to advantage in drilling some of the most troublesome parts of the hole. He touched on wire lines, casing, drilling and fishing jars, drilling speeds and costs. Whether a rotary rig would do the required work more cheaply than cable tools is a debatable question, he concluded.

W. P. Smith, of Godfrey L. Cabot, Inc., of Charleston, W. Va., declared that from an economic standpoint "it is impractical, in my opinion, to recommend any fixed schedule of well spacing" in his paper entitled, "Some Economic Aspects of Well Spacing in the Elk-Poca Field." The problem is continuously variable, he held, depending on the individual operator's seasonal market volume and his price as well as the extent of depletion in the particular area in which his well is located.

Modernization of central powers and individual pumping units in the Illinois basin has brought important economic advantages, W. C. White, of the Pure Oil Co., Olney, Ill., and M. A. Sherwood, of the Shell Oil Co., Inc., Centralia, Ill., pointed out in their paper on "Pumping Equipment and Practices in New Illinois Pools." (See complete paper, Page 67 in this issue.)

Plastics Made From Oil

William C. Goggin, of the plastics division of Dow Chemical Co., traced the history of plastics, the development of the industry and the great opportunities offered to that industry by the use of petroleum and its products as basic inexpensive raw materials, in his paper "The Development of Plastics and Synthetic Rubbers Associated With Petroleum Hydrocarbons."

R. B. Anderson, of the Columbian Carbon Co., of Charleston, W. Va., in his paper "Natural Gas Dehydration Units for Individual Wells," described small-volume, automatic natural-gas dehydration units to solve the problem of hydrate formations in gas lines at temperatures as high as 55° F., operated at pressures of from 300 to 600 lb

Dr. S. J. Pirson, Pennsylvania State College; D. T. Ring, Preston Oil Co., Columbus, Ohio; J. E. Schaefer, East Ohio Gas Co., Cleveland, Ohio; E. T. Heck, West Virginia Geological Survey, Morgantown, W. Va., and William Byers, Dymo Oil Co., Spencer, Ohio

A. P. I. ABSTRACTS

Additional A.P.I. abstracts and complete papers appear in the Engineering and Operating Section.

Gas Drive Successful in West Virginia Fields

E. T. HECK (Assistant Geologist, West Virginia Geological Survey, Morgantown, Pa.)

THE first West Virginia secondary-recovery project started in 1916 when air was injected in four wells in the Cow Run sand, was considered only moderately successful and it was not until 1932 that the process was tried on deeper sands.

J. J. Schmidt, East Ohio Gas Co., Cleveland, Ohio, and Al Lager, Siosi Co., Terre Haute, Ind.

In 1921 in Monongalia County, a well producing oil from the Big Injun sand was deepened to a gas pay in the lower formation. The well was tubed with a packer above the "Injun" and shut in during the summer months. The resulting accidental gas drive caused a marked increase in the production of nearby "Injun" oil wells and as a result a comparatively systematic gas drive was started the following year. Following the success of this experiment several gas drives were started in various parts of the state.

With but few exceptions the gas drives in West Virginia have been on an experimental basis. In spite of the lack of information, almost 13,000,000,000 cu. ft. of gas was used in gas drives in West Virginia from 1935 to 1938, inclusive. This is more than twice the volume used for this purpose during the same period for Pennsylvania, Ohio and Kentucky combined.

A map showing the 34 gas drives active in the

(Continued on Page 144)

Cole Pledges That Report Will Not Harm Industry

ASSURANCE that his committee will not recommend "anything uncomplimentary to the oil industry" was given last week by Rep. William P. Cole, Jr., chairman of the group of legislators that has been probing various aspects of the business since 1934. Before his committee left the southern producing states, where a week was spent attending the Interstate Oil Compact Commission meeting at New Orleans, La., and on field trips through Texas, Louisiana, Mississippi and Arkansas, Chairman Cole indicated his satisfaction with conservation accomplishments.

"I don't anticipate anything uncomplimentary to the oil industry," Chairman Cole told reporters at Jackson, Miss., when asked to make advance comments on what his committee's report will recommend to Congress. Later, in a conference with Gov. Paul Johnson of Mississippi, Chairman Cole was quoted as saying: "We have found the states keenly appreciative of the national-defense needs and of the increased broadening of the responsibility of every group which the changing situation creates."

Rep. Edward Kelly, a member of the subcommittee, was quoted at Shreveport, La., where the group conferred with officials of the Louisiana Conservation Department, in this language:

"The amount of cooperation evidenced by the states since creation of the oil states' compact, and the excellence of some of the state conservation laws seems to preclude any need for federal control now." While in New Orleans, members of the Cole committee conferred several times with Governors Sam Jones of Louisiana, Leon Phillips of Oklahoma, who is also chairman of the Compact Commission, and Payne Ratner of Kansas. All three executives are opponents of federal control in the oil industry and each has made a record against intervention of Washington in conservation regulation.

The Cole committee trip through the southern producing states this month was a final prelude to submission of its report to Congress. Findings of the group were originally scheduled to be concluded by May 1, but a delay of 2 or 3 weeks now appears certain.

At New Orleans, Chairman Cole intimated his report will be final and that he hopes the committee will not become "permanent."

Charles A. Wolverton, another member of the committee, was impressed by the extent of cooperation in conservation as represented by the Cotton Valley recycling plant which the group inspected. Representative Wolverton's reactions were expressed in this quotation from Shreveport:

"The amount of cooperation shown by operators among themselves, by states among themselves and between the states and the federal Bureau of Mines is amazing."

•

Tax Burden on Oil Men May Increase a Third

WASHINGTON, D. C., Apr. 21.—The petroleum industry will be called on to pay a heavy share of the 33 per cent increase in taxes which the administration has asked Congress to provide.

The federal gasoline tax unquestionably will be raised by ½ cent per gallon, and possibly 1 cent, and similar increases can be expected in the taxes on lubricating oils, transportation of oil by pipe line, automobiles, trucks, tires, and accessories as well as in all other federal excise taxes.

Normal corporation and excess-profits taxes will be increased, and so will individual-income taxes, but there probably will not be a general sales or salary tax at this time though they are under discussion. Some changes may be made in the administrative provisions of the revenue laws, and it is not unlikely that the Bureau of Internal Revenue may make another attempt to change the oil and mineral depletion allowance.

Preliminary drafting of the new tax bill is now under way and dates for public hearings soon will be set. It is planned to enact the measure into law by the middle of June, so increases in excise taxes would become effective at the beginning of the 1942 fiscal year, July 1, 1941.

The announcement that an increase of about $3,500,000,000 would be sought in next year's tax collections was made by Secretary of the Treasury Morganthau after a conference with President Roosevelt and with Democratic and Republican leaders in Congress. Members of Congress indicated agreement with the program, and early enactment is anticipated. No details were revealed as to increases in specific taxes, but the additional 3½ billion will require roughly an increase of one-third in all existing taxes.

The Treasury's hope is to raise about two-thirds of government expenses by taxation and the remainder by borrowing during the present emergency-defense period. Expenditures during the 1942 fiscal year are estimated roundly at 19 billion, and revenues during that year are estimated at about $9,223,000,000. If the new tax bill brings in an additional 3½ billion dollars the total revenues will be in the neighborhood of 12⅔ billion dollars, or about two-thirds of anticipated outgo. Should expenditures continue to increase, the administration may ask another tax bill next year, and sales and pay-roll taxes probably will be considered seriously then.

Since the federal gasoline tax is now 1½ cents per gallon, application of the one-third increase formula would mean an increase to 2 cents per gallon, but some observers believe that Congress may decide to raise it to 2½ cents because it is such a lucrative and convenient source of revenue.

The yield of the gasoline-excise tax naturally varies with the amount of motoring. During the fiscal year 1940, when the tax was 1 cent per gallon, the actual collections were $226,186,669. The budget submitted to Congress last January estimated the yield for the current fiscal year, at 1½ cents per gallon, at $360,600,000, and actual collections during the first 9 months of the fiscal year have been $252,426,461. The budget estimated the 1942 fiscal-year yield at $389,200,000, based on increased sales of gasoline at the present rate of tax. On the basis of budget estimates, every ½-cent increase in the gasoline tax will bring in an additional $129,733,300 of revenue, and if the rate is raised 1 cent the gasoline tax will yield something like $648,700,000 during the next fiscal year.

The lubricating-oil tax, now 4½ cents per gallon, is estimated to bring in $38,400,000 next year, and every ½-cent increase in the rate would yield an additional $4,266,600.

All corporation taxes will also be increased by roughly one-third under the present plan. The top bracket of the normal corporation-income tax, now 24 per cent, probably will be put up to 30 or 32 per cent, and other brackets adjusted proportionately. Likewise the excess-profits tax will be increased, perhaps even more steeply. Individual income-tax rates will be raised similarly. The present normal tax of 4.4 per cent probably will go to 6 per cent, but even higher rates are under discussion, and exemptions for dependents and the minimum to which surtaxes apply may be lowered.

•

Investigate Price-Fixing Charges

WASHINGTON, D. C., Apr. 22.—An investigation of charges of price-fixing in the distribution of gasoline in Wyoming will be undertaken immediately by the Antitrust Division of the Department of Justice, it has been revealed by Asst. Atty. Gen. Thurman Arnold.

First reports suggested that the investigation would cover gasoline prices throughout the Mid-Continent area, but attaches of the department explained that it will be confined to a relatively local situation in Wyoming where, it is alleged, jobbers and retailers have violated the federal antitrust law by abuse of the state's fair-trade law authorizing resale price-maintenance contracts.

•

Sinclair Confirms New Products Line Across South Pennsylvania

SINCLAIR REFINING CO. will build a 300-mile refined-products line, consisting of 6-in. and 8-in. pipe, according to an official confirmation of the company. The line will extend from Marcus Hook, Pa., via Reading, Harrisburg, and Altoona to the Ohio River at a point near Pittsburgh. At present pipe is stacked at convenient locations along the entire route. Before construction can begin there are certain obstacles which must be overcome. Laterals will be laid from the line. Most of these will run north.

No definite decision has been reached as to whether this system will be operated under the name of the Union Pipe Line Co. Plans are now being discussed for the construction of a Sinclair pipe line which would run southward and eastward from Chicago.

It is possible that the Sinclair proposed line may be connected through the use of old lines and the construction of new ones with the company's refinery at Chicago. Early last week Sinclair interests applied for a charter at Harrisburg, Pa., under the name of Union Pipe Line Co. with announcement of intention to build a line between Marcus Hook and the Pittsburgh area. Further information regarding Union appears on Page 100 of this issue. An article in the April 10 issue, Page 12, also discusses the plans of the Union Pipe Line Co. to build the line.

STATE CAPITALS...

OKLAHOMA

MARKET DEMAND for Oklahoma crude oil in May will be determined by the Corporation Commission at Oklahoma City, Okla., April 29, in a state-wide hearing called for that day. A conference of producers and purchasers will be held prior to the formal hearing.

The current allowable of 400,000 bbl. daily has been unchanged for the past 5 months.

THE SENATE last week passed a bill that would prohibit waste of natural gas and provide for regulation of spacing between wells. Authority to regulate production and development of gas-producing properties would be vested in the Corporation Commission and would amend the 1931 statute.

In the new bill which was introduced by Sen. Boyd Cowden of Chandler and Sen. Tom Anglin of Holdenville, Okla., "waste" is defined to mean economic waste, underground waste, waste incident to the production of gas in excess of transportation or market facilities, or in excess of reasonable market demand, the permitting of gas to wastefully burn and the wasteful utilization of gas.

TEXAS

TOTAL OIL ALLOWABLE assigned to Texas' 96,239 wells as of April 19 increased 3,528 bbl. owing to completion of 116 new producers during the week.

Difference in April 19 allowables and Bureau of Mines market-demand estimates were 27,397 bbl., but a 3.5 per cent underproduction estimate of 48,394 bbl. placed the state 20,997 bbl. below the federal board's calculated requirements.

West Texas gaining 1,321 bbl. daily during the week had a total of 228,268 bbl. allowable Saturday for the heaviest gain of the week.

Next came Southwest Texas with a total of 222,482 bbl., or 823 bbl. over the preceding week.

North Texas likewise gained 819 bbl. for a total of 113,922 bbl.

Gulf Coast reports reflected a 596-bbl. hike to 294,290 bbl. Panhandle allowables total 78,001 bbl., a gain of 395 bbl.

East Central Texas had 79,782 bbl. allowable, up 339 bbl.

West Central Texas gained only 40 bbl., increasing the total to 46,597 bbl.

A drop of 705 bbl. to a daily allowable of 364,255 bbl. was registered in East Texas.

THE HOUSE has granted permission to Rep. Lester Clark, Breckenridge, Tex., chairman of the house oil, gas, and mining committee, to introduce a bill designed to eliminate "selective buying" of crude. The bill, sponsored by Mr. Clark, specifies:

"The Railroad Commission shall not be required to consider market demand for crude oil produced from any single pool except in relation to the market demand for crude of the same character and quality produced from all of the pools in this state."

To a list of factors that the Railroad Commission shall take into consideration in determining a seasonable market demand, Mr. Clark added "and the reasonable ability of each purchaser to satisfy his or its desire for crude produced in this state without concentrating purchases in any selected pool or pools."

Other market demand-determining factors specified were consumer demand, storage and offers to purchase. The section also includes consideration of prevention of waste, quantity of oil to be produced from marginal wells, depth of producing horizons in any pool, density of drilling, character of oil and demand for that quality, number of wells in the field, availability of pipe lines, and other transportation facilities.

THE BILL PROVIDING regulation of production from condensate wells in Texas has encountered another delay. The Senate refused to set the bill for consideration April 29, a move launched by proponents. A motion to set the bill for consideration next Tuesday received 16 affirmative and 14 negative votes, short of the two-thirds majority necessary to advance the proposal over its regular order in the calendar.

ILLINOIS

A SERIES OF SPEECHES in opposition to enactment of a conservation measure is being made throughout Illinois by ex-Governor Stelle. He is attacking the administration's tax program indirectly in stumping against the issue of conservation.

An assertion made repeatedly by the former governor is that Oklahoma and Texas oil men want Illinois production limited because Illinois is 23 cents per barrel closer to the market.

Ex-Governor Stelle's appearances are being sponsored by the Illinois Oil and Farm Owners Equity Association organized for the purpose of preventing enactment of conservation laws which would restrict production in wells and fields where maximum output contributes to physical waste.

At meetings in Harrisburg and McLeansboro, Ill., last week, the former governor declared that the oil industry is supporting the higher oil-tax bill now pending in the legislature in the hope that later Gov. Dwight Green will throw his support behind a conservation measure.

WYOMING GEOLOGIST . . .

HORACE D. THOMAS, Laramie, Wyo., recently was appointed state geologist to succeed S. H. Knight who resigned in September 1940. Mr. Thomas was a geologist for Union Oil Co. of California in the summers of 1936 and 1937 and acted as consultant to the company on Rocky Mountain problems from 1938 to 1940. He is chairman of the Wyoming A.A.P.G. Permian Committee and a member of the National Research Council Permian Committee. Mr. Thomas was an instructor in geology, University of Wyoming, 1931-34, served as assistant professor from 1934-38 and then became an associate professor in the department

CALIFORNIA

A PLAN TO PROVIDE greater allocations to wells producing heavy oil has been recommended to the members of the conservation committee of California Oil Producers by its allocation committee, of which L. L. Aubert is chairman. The recommended plan, selected after a study of 12 suggested methods, will apply to May production quotas if it is adopted by the main committee.

"For purposes of comparison, the allocation committee also submitted three other plans to the main committee," Aubert said, "but the method selected was chosen because it stays within the framework of the present curtailment plan, and at the same time results in the greatest proportionate increase in allotments to heavy-oil wells. One other plan, which would give a still greater amount of allotment to heavy-oil wells, was not recommended by the committee because it introduced a new factor into the present curtailment formula.

"Under this plan, 80 per cent of the contemplated increase in production will go to heavy oil and 20 per cent to light, through an adjustment of the power factor so that the allotment to wells with a potential of less than 250 bbl. per day is increased. In the application of the recommended program, the small wells will receive the greatest proportionate increase in allotment, and in no case will any well receive less than its allocation under the formula now in use. The recommended plan contemplates no change in the maximum allotment for May, of 144 bbl. per day, nor in the depth minimum exemption which protects stripper wells," Mr. Aubert stated.

The committee began its study of the problem of providing greater allocations to heavy wells several months ago, when it became apparent that the demand for heavy crude and fuel oil was exceeding production of that type of oil, and that the production of light oil was greater than its demand, with the result that heavy crude and fuel were being drawn from storage while storage of light oil and its products was increasing.

The matter was brought to a head at the last meeting of the conservation committee, when the committee instructed the allocation group to prepare and recommend a corrective plan prior to the next meeting of the main committee.

TWO LEGISLATIVE PROPOSALS to sanction cooperation of oil producers for the purpose of conserving oil and gas were tabled last week virtually ending all possibility of enactment at this session of the California Assembly. The bills, which failed to receive committee approval, were AB 2483 and AB 1715, the former being for the purpose of giving legal recognition to voluntary agreements for the regulation of production and the latter would have authorized the state to join the interstate compact.

Richard Sachse, director of natural resources, objected to AB 2483 as it would exempt oil companies from federal prosecution and would make a czar of the director.

ARKANSAS

THE ORDER PROVIDING that no more than 40 acres should be assigned to any one well for the purpose of allocating production in the state has been abrogated by the Oil and Gas Commission. Abrogation of the order was entered in the record upon consideration of testimony presented before the commission at El Dorado, Ark., April 11.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

Tax Collectors' Goat

Sessions of Congress and of many state legislatures have reached the new-tax stage. Since the first of the year billions in expenditures have been authorized and now the lawmakers have the task of finding new revenue to cover the increases.

Reports show that all divisions of the oil industry are figuring prominently in these deliberations. As in the past, the legislators who usually find the tax raising as boring as the spending is pleasant, turn to oil as other possible sources of revenue develop opposition.

In Texas, the senate affairs committee has reported out an omnibus bill which includes taxes on that state's industries totaling $13,936,000, of which $11,240,000, or 81 per cent, will be paid by the petroleum industry. This figure does not include the state gasoline taxes.

In Oklahoma, after other new taxes had been strongly opposed, it has been agreed that the state gasoline tax should be boosted. Substantial advances in petroleum taxes are in prospect in several states.

With an increase in the present 1½-cent-per-gallon tax on gasoline and additions to other existing levies proposed, the petroleum industry is scheduled to pay more than its part of the 3½-billion-dollar additional federal revenue demanded at Washington. Proposed changes in depletion allowances and other revisions in existing laws have a direct bearing on this development.

In considering new levies, the taxing bodies should be made to realize that this business now pays far more taxes than any other. Last year the payments totaled more than domestic producers obtained for their crude and also exceeded what refiners received for gasoline.

Producers, refiners, transporters and marketers in the past have been able to pay these mounting assessments through decreased earnings and because of savings brought about by increased operating efficiency.

The consumer has not complained because despite the higher taxes, prices for the finished products have decreased. The low prices have been accompanied by a steady improvement in quality and in customer service not equaled in any other field of retail distribution.

This industry has not reached the end of the road in operating efficiency but it can no longer absorb further taxes within itself.

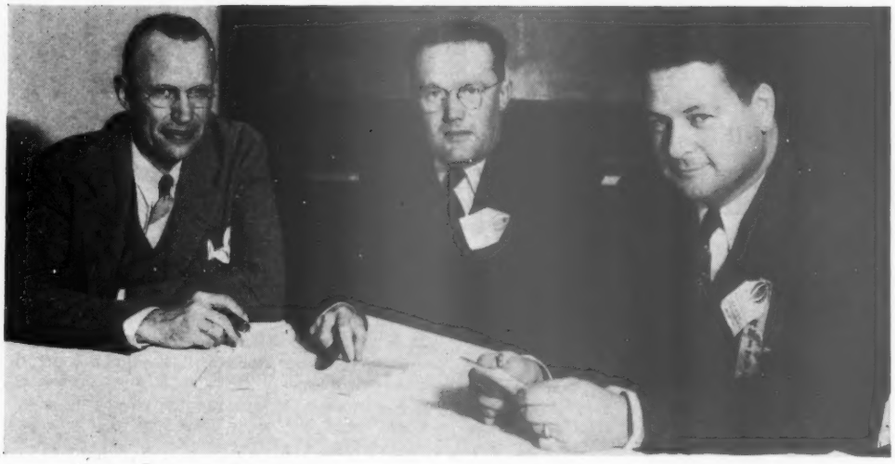
Some will be hesitant in opposing additional unfair levies because the opposition might be interpreted as an unwillingness to do their part in supporting the defense program. There is a long-range principle involved here, the importance of which may be overlooked in the efforts to balance outgo and income through the present emergency without regard to economic reactions.

This country's growth over the past quarter-century has largely revolved around the automotive and petroleum industries. Directly, and indirectly through their influence on other businesses, the internal-combustion engine and its fuels have furnished the impetus for industrial progress and the establishment of a standard of living which has been the envy of other peoples.

It is essential that these basic activities continue. Nonproductive defense preparations can continue only so long as they are supported by productive enterprise.

Exorbitant taxes levied against petroleum and allied industries which have given this country cheap power, universal transportation and the best in employe relations will end these conditions from which spring this country's permanent strength in peace or war.

The petroleum industry is ready to do its full share in assuming the heavy tax burdens that are to come. But responsibilities in maintaining this country's economic superiority, as well as self-interest, demand that it not become the goat of the tax collectors.



At a luncheon of the general committee of Southwestern Gas Measurement Short Course: Dean W. H. Carson, University of Oklahoma, chairman, executive committee; R. L. Rountree, United Gas Pipe Line Co., Shreveport, La., 1940-41 chairman, general committee; G. W. McCullough, Phillips Petroleum Co., Bartlesville, Okla., 1941-42 chairman, general committee.

Gas Measurement Short Course Considers Meter Problems

By PAUL REED

GAS and oil men from 23 states and Mexico assembled at Norman, Okla., April 15-17, for the seventeenth annual Southwestern Gas Measurement Short Course. A conspicuous feature of the course this year was the large number of classes and meetings conducted by men with oil and gas companies. As in the past, a considerable amount of instruction was given by representatives of meter companies and members of the University of Oklahoma faculty. Exhibits of meter companies have increased in recent years to the point of congesting the limited space available in the present building of the college of engineering. Emphasis is laid on the morning sessions of the course which are held in the auditorium where papers of general interest and fundamentals are presented. The importance of fundamentals is stressed each year. During the afternoons students are divided into a number of classes for study of details of the various aspects of metering.

Dean W. H. Carson, college of engineering, University of Oklahoma, as permanent chairman of the executive committee of the short course, guides the policies. The affairs of the course have been directed during the past year by R. L. Rountree, United Gas Pipe Line Co., Shreveport, La., who has been succeeded for the coming year by G. W. McCullough, Phillips Petroleum Co., Bartlesville, Okla., who has just completed a term as chairman, program committee, for this year's course. Max K. Watson, Canadian River Gas Co., Amarillo, Tex., becomes the new chairman of the program committee. E. C. McAninch, Oklahoma Natural Gas Co., Tulsa, was appointed chairman, practical methods committee, for a 2-year term, in which he will have charge of the publication of reports and the study and assembling of data to be made available to the oil and gas industry as reference matter.

The gas industry's relation to government and its place in national defense were the basic themes of the speakers addressing the course on subjects of general interest to the industry.

The prospect of having national and state authorities assume control of the gas industry was pointed out by J. T. Strickler, Kansas City, Mo., president of the American Gas Association and vice president and general manager of the Kansas City Gas Co.

Outside control of the gas industry will come about should the industry fail in advance to prepare its people and its plants for any serious emergency, he declared.

E. H. Poe, secretary of the Natural Gas Section of the American Gas Association, told the gas-measurement conference delegates we need a complete and introspective analysis of our domestic economy, a thorough study of our taxing system, both state and national, that tax deterrents may be removed.

Looking into the future of the gas industry, Mr. Poe said a continuous reduction in the reserve of skilled labor could be expected. He said in times of crisis, in addition to its regular duties to the country, the gas industry could contribute valuable byproducts.

One of these that he mentioned was toluene, used in the manufacture of high explosives, carbon black, banana oil, alcohols, and many other chemicals. He said the gas industry is ready to produce requirements of toluene as it is needed in the preparedness program.

Forecast Brilliant Future

William F. Lowe, Tulsa, secretary of the Natural Gasoline Association of America, forecast a brilliant future for synthetic products from crude oil and natural gas.

Mr. Lowe cited the possibility of feeding, clothing, and sheltering a family from synthetic products of oil and gas.

"Everything in any home, besides metal, could be replaced with synthetics from oil or gas," he declared, and warned: "Keep up with developments in chemical engineering. Synthetics will come more to the front as a result of our national-defense program."

Andrew F. Schoeppel, chairman, Kansas Corporation Commission, said consideration should be given to the policy in regard to gas reserves. He called attention to recent decisions of the U. S. Supreme Court which indicate that, in the production of gas, matters which have been considered local might enter a field of conflicting jurisdiction, in which the authority of the federal Government would be supreme. In this connection he said, "The threat of federal control is very real and it will be avoided only by diligent and timely opposition."

The best operating and maintenance wrinkles for metermen presented at the course last year were ranked but no money awards were made; these are: First, "Adjustable Cap for Domestic Meters," Charles Fuqua, Consolidated Gas Utilities Corp., Cushing, Okla.; second, "Pulsation Dampener for Pressure Gages," L. F. Carter, Colorado Interstate Natural Gas Co., Colorado Springs, Colo.; third, "Socket Wrench for Orifice-Meter Work," J. L. Whipkey, Canadian River Gas Co., Channing, Tex. This year more attention was given to wrinkles, to which several hours were devoted on the last day.

Some companies sending men to the course require that a report be written on useful information obtained. The course gives cash prizes for the best reports of this kind which are submitted in competition. At this year's session of the course, prizes were announced for last year's reports as follows:

First prize, $15, Sibyl McKay, Victor Gasoline Co., Tulsa.

Second prize, $10, R. O. Cox, Lone Star Gas Co., Dallas, Tex.

Third prize, $5, B. H. Fowler, Phillips Petroleum Co., gas purchase division, Bartlesville, Okla.

Third prize, $5, J. J. Hickey, United Gas Pipe Line Co., Beeville, Tex.

Third prize, $5, George W. Smith, Gas Service Co., Joplin, Mo.

Third prize, $5, Herman C. Cowdery, Cities Service Gas Co., Bartlesville, Okla.

Third prize, $5, J. B. Reidhimer, Arkansas Louisiana Gas Co., El Dorado, Ark.

DEATHS

RALPH J. BENNETT, formerly of Petrolia, Ont., Canada, and employed with Royalite Oil Co. in Alberta for the past 15 years, died at Turner Valley, Ont.

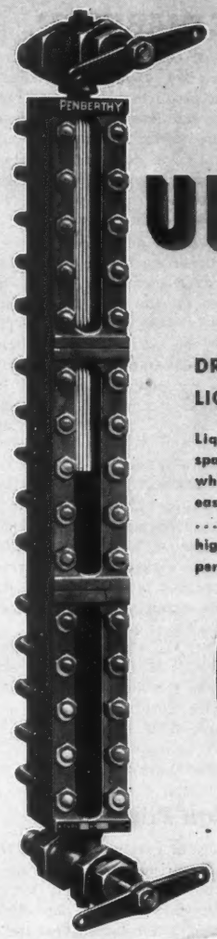
SYLVESTER NOBLE, 54, of Pure Oil Co., died in his room in a Galveston, Tex., hospital April 16. He was born in Houston, Tex., and had been with Pure for several years. His widow survives.

EDWARD M. HEAD, 42, foreman in the Quaker State Oil Co. refinery at Farmers Valley, Pa., died at an Olean, N. Y., hospital last week following an illness of 6 months. He was born in 1899, in Costello, Pa., and had been foreman for Quaker State for the past 14 years. His widow, a daughter and four sons survive.

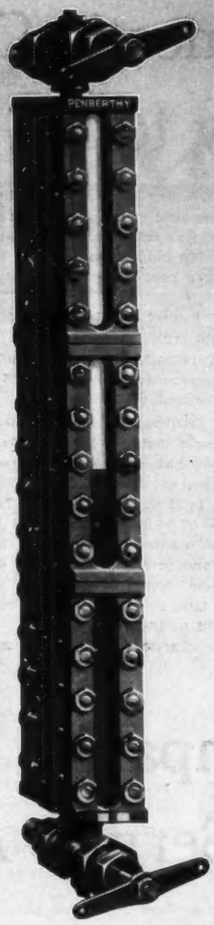
E. L. ADAMS, an oil-well rig builder for Sun Oil Co., died April 18 when he fell from a derrick in the Caplan field, near Beaumont, Tex.

BARNEY LEE HARRIS, 56, credit manager of Gulf Oil Corp., Houston, Tex., died April 18 at his home in Houston, Tex. He had been a resident of Houston for 40 years, and an employ of the Gulf corporation for 34 years. His wife and a daughter are among the survivors.

HARRY HEASLEY, 78, pioneer Oklahoma and Pennsylvania oil and utility man, died at his home in Emlenton, Pa., April 19. He failed to regain his health after an operation 2 years ago. Although he maintained his residence in his birthplace, Emlenton, Mr. Heasley spent much time in Oklahoma as an early-day natural-gas distributor and because of affiliations with Oklahoma Natural Gas Co. and Devonian Oil Co. He served as president of the former company from 1921 to 1926, and as a director in the Devonian company for 45 years. Mr. Heasley entered the oil business as a young man in partnership with the late C. P. Collins, becoming interested in Devonian upon its organization in 1891 with the acquisition of the Collins-Heasley properties by the newly formed Devonian company. He had served continuously as director since 1896 and was for 25 years treasurer of the company. He organized several natural-gas distributing companies in Oklahoma antedating and later entering into the formation of the Oklahoma Natural Gas Co. He was the organizer and president of the Caney River Gas Co., which laid an early transmission line from the old Hogshooter gas field to Muskogee, Okla. Among his other companies were the Oklahoma Fuel & Supply Co. and the Hecla Oil Co. His widow survives.



QUALITY UNCOMPROMISED



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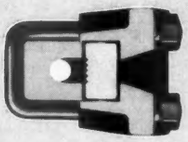
Liquid shows black—empty space shows white. Preferred wherever liquid level must be easily and positively visible . . . and when liquids are under high pressure or at high temperature.



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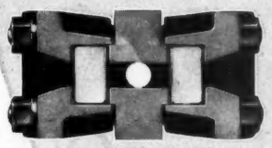

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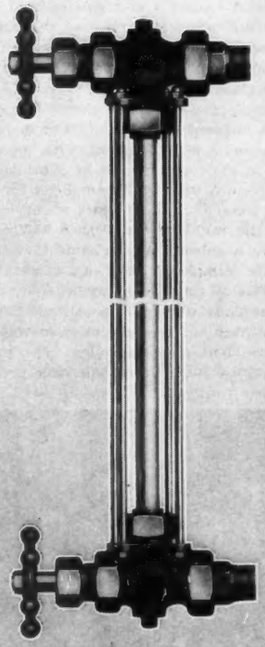
Made of Chromium-molybdenum alloy temperature-resisting steel, extra heavy throughout. Stainless steel trimmed. Tubular glass type gages also available in various other metals suitable for practically all conditions.



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DETROIT, MICHIGAN • Canadian Plant: Windsor, Ontario

PENBERTHY PRODUCTS

Domestic Crude-Oil Demand in May to Be 3,799,700 Bbl. Daily

WASHINGTON, D. C., Apr. 21.—Daily average supply of domestic crude oil to meet the market demand for May was estimated by the Bureau of Mines today at 3,799,700 bbl., an increase of 90,400 bbl. over April and 2 per cent higher than actual demand in May 1940.

During the 4 weeks ended April 5 daily average production and runs to stills were 3,651,000 and 3,608,000 bbl., respectively, while stocks during the same period increased an average of 45,000 bbl. daily, indicating a demand of 3,606,000 bbl.

The bureau predicts that during the first 6 months of 1941 domestic demand for all oils will increase about 50,000,000 bbl. over the same period last year with a reduction of about 25,000,000 bbl. in exports, resulting in a total demand of about 743,000,000 bbl., or an increase of 30,000,000 bbl., or 4 to 5 per cent.

Assuming a seasonal increase in total stocks of 6,000,000 bbl. and probable imports of 48,000,000 bbl., the required new domestic production would amount to 700,000,000 bbl., or about 2 per cent less than for the same period in 1940.

Most notable change during first quarter this year has been an unexpectedly strong domestic market for motor fuel with sales up 12 to 13 per cent over 1940.

Stocks of finished and unfinished gasoline approximated 98,000,000 bbl. on March 31, or about 6,000,000 bbl. less than the peak in 1940.

Domestic demand for motor fuel in May is estimated at 58,500,000 bbl., an increase of 10.5 per cent over actual demand in May 1940, while exports are expected to total about 1,700,000 bbl., or 200,000 bbl. less than estimated for April.

Natural gasoline for blending at refineries is estimated at 5.8 per cent of total refinery production or 3,220,000 bbl., while yield of straight run and cracked gasoline is estimated at 44.5 per cent, giving total crude runs of 117,490,000 bbl.

Foreign-crude runs are expected to reach 3,900,000 bbl., exports to total 2,500,000 bbl., and crude for fuel and losses at 1,700,000 bbl., giving a total demand of domestic crude 117,790,000 bbl. for the month.

Crude demand in barrels by principal states is as follows: Texas, 1,382,200; California, 598,100; Oklahoma, 440,000; Illinois, 336,100; Louisiana, 320,300; Kansas, 213,900; and New Mexico, 113,900.

THE MARKETS*

CRUDE OIL: Sellers are still in command of the crude market. Demand is particularly strong in middle western producing states and for crudes with special refining characteristics in other sections of the country. The Texas Railroad Commission has reaffirmed its intention of holding production to estimates on demand from that state made by the Bureau of Mines. Production is currently about 45,000 bbl. per day below the bureau's estimated demand for May.

REFINERY: Advances continue in the refinery gasoline tank-car market of the Mid-Continent and Atlantic seaboard. A temporary lull has arrested the series of advances on the Gulf Coast but demand is holding at the increased levels which have governed the market for the past 4 weeks. Demand is particularly brisk for 68-octane gasoline which several Gulf Coast refiners are now producing by blending off portions of aviation motor fuel. Residual fuel-oil prices advanced 5 cents on the Gulf Coast and 10 cents per barrel on the Atlantic seaboard. New York gasoline prices were raised 0.25 cent this week.

TANK-WAGON AND POSTED-DEALER: Advances of tank-wagon prices on distillate fuels, including kerosene, have been applied to practically all eastern states in sympathy with stronger markets on the Gulf Coast and higher tanker rates. All grades of fuel oil have been advanced in the Chicago district and lower Michigan tank-wagon quotations on gasoline have been increased 0.5 cent per gallon.

FINANCIAL: Oil securities suffered again last week in depression of the market. Average of 30 representative stocks for the week ended April 19: High, 22.95; low, 22.15; close, 22.45. Week ended April 12: High, 23.56; low, 22.43; close, 22.52.

*Detailed information in market section.

Foreign Prices Rise

A study of gasoline prices in 18 foreign cities made by the Department of Commerce shows that costs of motor fuel have been vastly increased since the European war started. Prices abroad range from 22.8 cents in Curacao, Netherlands West Indies, to 65.7 in Zurich, Switzerland, and 64.8 in Stockholm.

Companies Honor Old Employes At Service-Award Dinners

TWO companies have this week been honoring employes who have completed stated periods of service with the companies, the occasions being marked by service-award dinners and the presentation of gifts and emblems. Thirty such gatherings were held by Gulf Oil Corp., at which Gulf veterans were presented with jewel-studded lapel emblems and personalized certificates bearing their terms of service to the company. These dinners were held throughout the country, and more than 5,500 employes were honored. The terms of service recognized in this manner were 10, 15, 20, 25 and 30 years.

The Texas Co. honored employes of 25 or more years of service at a series of 12 dinners, with more than 1,300 employes of the company and its subsidiaries attending the dinners. A total of 372 employes for whom 1941 marks the completion of 25 years of service were welcomed into the ranks of the Texaco 25-Year Club by its 958 active members. At the same time, 81 employes who have completed 30 years of service received their official 30-year gold watches.

The dinners at Tulsa were typical of those held elsewhere. Chief speaker on the Gulf program was H. A. Gidney, vice president and controller. The meeting was presided over by Rush Greenslade, vice president, and a total of 552 employes attended the dinner. J. H. Hill served as toastmaster of the Texas Co. dinner, at which 87 were in attendance.

Above: Scene at speakers' table during Gulf service-award banquet at Tulsa. Samuel D. Buckner, Glenn C. Grove, Walter L. Perryman, 30-year veterans, being congratulated by Vice Pres. Rush Greenslade. At right of Mr. Greenslade is Judge James B. Diggs, general attorney.

Left: Texas Co. employes who were honored at Tulsa. First row: C. D. Wilson, J. L. Rogers, Anthony Rasnic, Delma Penn, J. H. Hill, G. E. Nance, Ray H. Pitcock and John B. Wheeler. Second row: B. B. Smith, J. E. Flanagan, J. R. Ramsey, Earl St. Clair, N. E. Michael, T. V. Blackman, Samuel Haught, P. F. Davis, W. J. Webb and Frank C. Root. Third row: Joner L. Mathews, L. F. Brown, R. E. Hearn, John Ray Jones, Joseph Maroney, R. R. Lawrence, J. R. Hall, W. F. Hutchinson and Guy Folsom.

International

Bolivia . .

Opposition Develops To Return of Standard

OPPOSITION is developing among certain groups to the Bolivian Senate project for an oil agreement with the United States involving reinstatement of the Standard Oil Co. of Bolivia. The senate project, introduced recently by a minority bloc, urged an agreement with the United States on the grounds that questions arising from cancellation of the Standard of Bolivia contract in 1937 damaged relations between the two countries.

The contract, giving the Standard Oil Co. (New Jersey) subsidiary exploration and exploitation privileges, was cancelled for alleged failure of the company to declare the concession in commercial production in 1936 which would have raised the tax rate. Other breaches of contract were alleged when the cancellation was ordered. Standard of Bolivia has denied all phases of the charges and has enlisted aid of the Department of State in recovering its property or indemnification payment.

Colombia . .

Two Wildcat Operations Are Added to Active List

COLOMBIAN Petroleum Co. 1 Socuavo is reported drilling in lime and shale at 8,319 ft. Colombian 2 Tres Bocas is rigging up. Clearing and grading of the roadway to 1 South Sardinata has been completed and surfacing is now under way.

Venezuela . .

Exports Suffer From European-War Blight

THE effect of the war on the Venezuelan oil exports has been even more serious than anticipated as late as last September when a drop of slightly more than 16 per cent was estimated for 1940. Preliminary data on crude-oil exports for last year reveal that the decline was approximately 17.7 per cent. Exports in 1940 consisted of 158,117,000 bbl., including 33,000 bbl. of natural gasoline, against 192,124,000 bbl. in 1939.

Venezuela's exports by months for 1940 follows:

	Bbl.
January	13,463,000
February	12,254,000
March	13,114,000
April*	14,249,000
May*	16,376,000
June*	17,298,000
July*	13,760,000
August	13,829,000
September	12,026,000
October	10,868,000
November	10,058,000
December	9,822,000
Total	158,117,000

*Including 8,000 bbl. of natural gasoline in April, May and June and 9,000 bbl. in July.

The statistics, as reported by the Bureau of Mines, show that exports in December were off more than 43 per cent from the year's peak of 17,298,000 bbl. reached in June.

PRODUCTION of 385 bbl. per day of 35.6° A.P.I. gravity oil through a $\frac{3}{16}$-in. choke has been encountered in Texas Co., Ltd., 1 Rincon Largo, southwest of the Santa Ana field in the State of Anzoategui. This test was drilled to 9,631 ft. Production was developed between 8,775-90 ft. after gun-perforating casing at that depth.

S. A. Petroleum Las Mercedes 1 Mercedes, west of the Manapire River in Guarico, is reported drilling at 5,738 ft.

With casing cemented to 2,000 ft., Mene Grande Oil Co. is now drilling at 3,340 ft. in its wildcat at Quaimare. The fourth Leona-El Tigre well is drilling at 4,300 ft. and at Santa Rosa No. 3-RG is drilling at 4,186 ft.

Philippines . .

National Development Given Exclusive Rights

The proclamation recently signed by President Manuel L. Quezon set this area apart as a "petroleum-mining reservation" and closed it "to oil geological exploration and petroleum drilling." At the same time he signed the supplementary permit authorizing the National Development Co. to explore, exploit, develop and utilize all the petroleum deposits and lands in this area.

Conditions stipulated in the permit limit its term to 25 years, renewable for the same period by the president. At the same time the company agrees to pay "a gross production royalty of 12½ per cent on all crude oil or casinghead gasoline produced, and 6¼ per cent of all natural dry gas or the proceeds of its sale. In the event that any lands are under private ownership, the royalties due on the value of the gross output shall be reduced by 5 per cent "which reduction shall be the landowner's share to be paid to him by the National Development Co."

An interesting stipulation is that the company "binds itself to comply with the rules and regulations issued by the secretary of agriculture and commerce for the purpose of insuring reasonable diligence, skill and care in the operation of said property and for the prevention of undue waste."

Portugal . .

Representatives Arrive To Arrange for Tankers

PORTUGAL is suffering from a shortage of oil and has sent two representatives to this country to purchase tankers. They are Capt. Carlos Theodore de Costa, Portuguese naval officer, and Capt. Louis Loura of the merchant marine. They told reporters at La Guardia Field, New York, where they arrived by clipper, that "We are here to buy ships, mostly oil tankers, of not more than 10,000 tons. We see a great need for oil in the next few months. That is why we are here. The oil we will buy will be for internal consumption. None will go elsewhere."

Argentina . .

National Company Lifts Argentina Production

PRODUCTION of crude petroleum in Argentina advanced from 18,613,167 bbl. in 1939 to 20,609,160 bbl. last year—an increase of 10.7 per cent. The Government Oil Fields (Yacimientos Petrolíferos Fiscales) produced 12,474,655 bbl., a gain of 2,252,122 bbl., or 22 per cent, over the previous year but the production of the private companies declined 3 per cent to 8,134,505 bbl.

The proportion of imported crude utilized by Argentine refineries fell from 20.4 per cent of the total in 1939 to 15.4 per cent in 1940. In 1940, the total amount of crude runs to stills amounted to 25,653,429 bbl., of which 3,946,200 were from foreign sources, while in 1939, 4,837,568 bbl. out of a total run of 23,766,367 were imported from other countries.

Developments of interest during the year included the completion of a new Government company refinery in Lujan de Cuyo, Province of Mendoza. The capacity of this refinery is reported at 3,145 bbl. of crude oil daily. During the year additions were completed to the refinery of the same company in La Plata, Province of Buenos Aires, raising its reported capacity to 31,450 bbl. per day. Government Oil Fields also opened a new research laboratory in Buenos Aires.

A PROPOSED bill for the taxing of domestic and foreign oil companies has been sent to the Argentine Congress now in session at Buenos Aires. The bill would take 60 per cent of "abnormal" profits of the companies as government revenue. The term "abnormal" was defined as being in excess of average earnings during the 5-year period from 1932 to 1936.

Accompanying the proposed bill was a message stating that oil-company earnings had skyrocketed to "as much as six times the former profits" since the government established regulation of the oil industry in 1937.

Plans for fostering trade with the United States were completed by the government last week. Its effect on oil, an important factor in intercountry relations, could not be gaged.

ULTRAMAR S.A.P.A. is reported shut down at 3,815 ft. in 2 Saladillo in the Province of Jujuy. The 1 Cerro Lumbreras in the Province of Salta is cleaning out at 571 ft. preparatory to running 16-in. casing. The same company's 1 Piedra Clavada, in the Province of Santa Cruz, is coring at 2,850 ft. in hard conglomerate in which was found a slight gas show.

Brazil . .

Petroleum Exempt From Omnibus Import Tax

CARGOES of gasoline, kerosene, diesel oil, lamp fuel and lubricating oils are the only ones exempt from the new import tax which is now applicable to all goods landed at Brazilian ports regardless of origin.

72,000-hp

When you purchase compressor equipment, you've good reason to ask the maker if he has the experience to build that all-important part of your plant machinery. For reply, we point to the 72,000-hp in motor-driven compressors which we have furnished the process industries!

We're ready with the experience, the skill, and the engineering ability to furnish motor-driven compressor units for *your* specific processes . . . units ranging from 500 to 3,000-hp each . . . designed to handle pressures from vacuum to 6,000-psi. Hundreds of special Cooper-Bessemer compressor cylinders are serving unusual processes . . . and we're constantly applying automatic control for exact maintenance of flow rates and pressures.

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New York, New York
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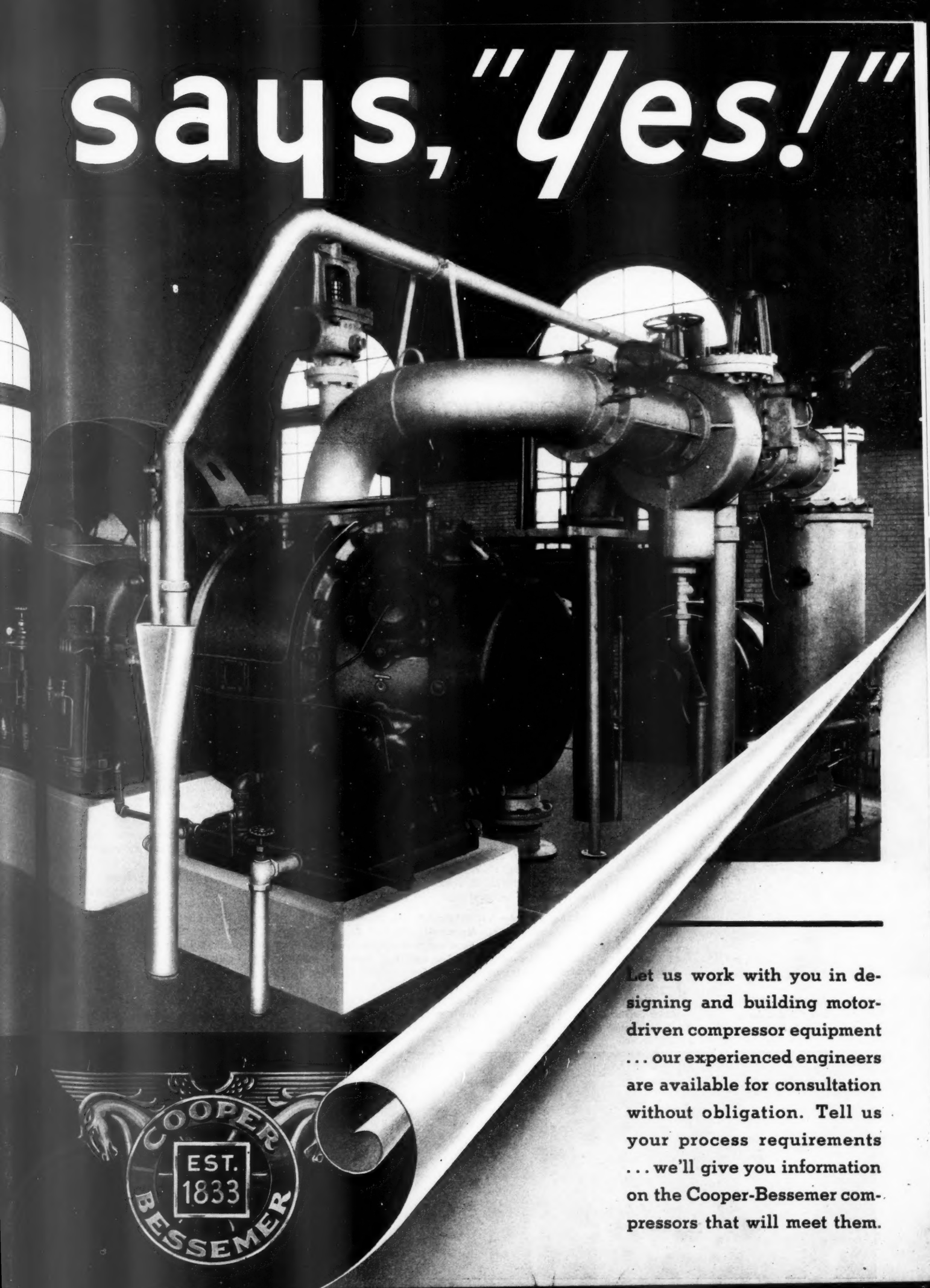
says, "Yes!"



Let us work with you in designing and building motor-driven compressor equipment . . . our experienced engineers are available for consultation without obligation. Tell us your process requirements . . . we'll give you information on the Cooper-Bessemer compressors that will meet them.

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Program chairman

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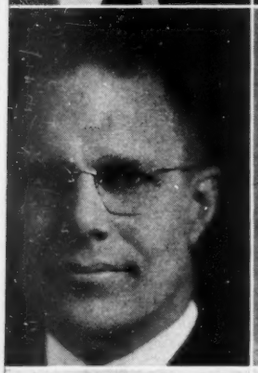
Lone Star Gas Co.,
Vice president, N.G.A.A.

WILLIAM F. LOWE
Secretary-treasurer,
N.G.A.A.

J. A. La FORTUNE
Warren Petroleum Co.,
Wednesday chairman

V. E. MIDDLEBROOK
Shell Oil Co., Inc.,
Technical speaker



Natural Gasoline Producers Concluding Annual Meet

THE "kinks" session, a technical paper and announcement of new officers remained on the Friday program to conclude the annual meeting of the Natural Gasoline Association of America at Dallas, Tex. Technical-committee reports and special papers presented and discussed during the first two days of the meeting April 23 and 24 drew record attendance.

The "kinks" program, designed especially for plant-operating men, has developed through the years into one of the most widely attended sessions of the association's annual meetings. New and improved ways of doing routine jobs or of original equipment to better handle ordinary or special operations are disclosed at the "kinks" meetings and they all have particular or general application in the industry's 609 plants.

Earlier natural-gasoline producers had listened to George P. Bunn, president of the association, call for a militant stand against unbearable taxes proposed against the industry in some states.

They had heard reports from technical committees on two basic testing methods used throughout the industry. New data were injected into the charcoal-test code and into the procedure for determining Reid vapor pressure as the result of research work conducted through the past year by members of the association.

Left, top to bottom: R. A. Carter, Continental Oil Co., technical speaker; Dr. G. G. Brown, University of Michigan, who discussed technical phases of natural-gasoline manufacture, and H. A. Montgomery, Hanlon-Buchanan, Inc., coauthor of technical paper

Right, top to bottom: P. M. Raigorodski, Glen Rose Gasoline Co., chairman Thursday morning; Dr. F. H. Dotterweich, Texas A. and I. College, who reviewed chemicals obtainable from natural gasoline and G. L. Brennan, speaker on safety practices.

H. H. Beeson, Sabine Valley Gasoline Co., Inc., Shreveport, La., vice chairman of the technical committee, presented a report on "New Volume Correction Factors in Liquefied Petroleum Gases." The subject received particular attention because of the rapid growth in the past few years of the liquefied petroleum-gas phase of natural-gasoline operations. C. R. Williams, Continental Oil Co., Ponca City, Okla., chairman of the committee was unable to attend.

S. F. Mauney, Jr., head of Carter Oil Co., Tulsa, natural-gasoline operations, presided at the opening session April 23. J. A. La Fortune, vice president, Warren Petroleum Corp., Tulsa; Paul M. Raigorodsky, vice president, Glen Rose Gasoline Co.; Harry Ells, Cities Service Oil Co., Bartlesville, Okla.; Allen T. Givens, Coltexo Corp. and B. R. Carney, Shell Oil Co., Inc., were other chairmen of the sessions held during the 3-day meeting.

D. A. Sillers, chief gas engineer for Lone Star, presented an extension of his work on "Making Gas Measurement Balance in a Cycling Plant," and R. A. Carter, Continental Oil Co., presented a paper on "Dehydration in High-Pressure Gas Operations as Applied to Repressuring and Pressure Maintenance." Both papers formed part of the background for a discussion by Dr. G. G. Brown, University of Michigan.

C. E. Wharton, Hanlon-Buchanan, Inc., discussed "Low-Temperature Fractional Analysis, Apparatus and Procedure."

Some of the new regulations covering transportation and handling of liquefied petroleum gas were reviewed and their significance discussed in a paper by G. L. Brennan, Philgas division, Phillips Petroleum Co., Bartlesville, Okla. Suggestions were made as to how the industry can maintain the brilliant safety record already established.

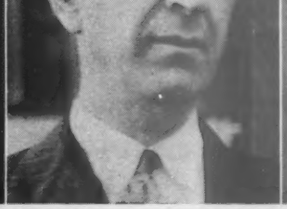
JED BURNHAM
Shell Oil Co., Inc.,
Technical author

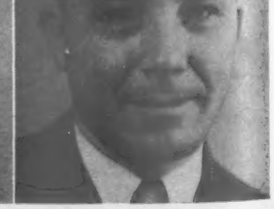
H. L. ODER
Cities Service Oil Co.,
Chairman, testing committee

D. A. SILLERS
Lone Star Gas Co.,
Technical speaker

S. F. MAUNEY, JR.
Carter Oil Co.,
Session chairman

C. R. WILLIAMS
Continental Oil Co.,
Chairman, technical committee



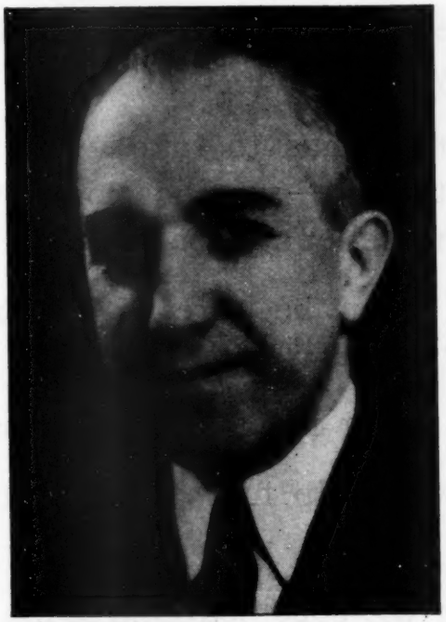


Misguided Taxation Threat to Natural Gasoline in Texas

By GEORGE P. BUNN
Phillips Petroleum Co.
President Natural Gasoline Association of America

WHAT matters should your president discuss in reporting on the state of the industry? Can his address, always given a place of prominence on the opening day of the convention, be more than perfunctory—merely a filler of space? I think certainly it should be more than this and I have approached the assignment seriously, hoping that you will regard my observations carefully; that you might even reread them later, and though you may not in each case agree, your thinking and acting may be challenged to progress. Note well these observations:

The natural-gasoline production of Texas, now more than 30 per cent of the nation's total, may slump to less than one-tenth of this amount by July 1, 1941, because of misguided taxation of natural resources! The return of the industries and homes of the country to the more or less exclusive use of coal and coal products and the restriction of production and use of natural gas, butane, and other gas products, as urged by mining labor, coal producers and distributors, and proposed by federal agencies to be effected through federal control, will stifle free competition and restore inconvenience and expense to millions of consumers! National liquefied petroleum-gas consumption, increasing over 800 per cent in the latest 7 years is testimony to ready-consumer reception, to its advancing economic possibilities and is a tribute to remarkable engineering and sales effort! Distillate, natural gasoline, and other gas-product recovery from high-pressure gas-recycling operation adds millions of gallons to motor-fuel supplies and conserves the residue gas for future consumption! Methods have been discovered by means of which the nation's normal annual requirements for motor fuel could be supplied without the use of a single barrel of crude petroleum! To these rather dramatically stated issues, and perhaps a few others, I wish to direct your further attention for a little while.



GEORGE P. BUNN, who in his presidential address, reviewed events of the past year in the natural-gasoline industry, and ventured predictions as to what the future holds

Texas Production

Let us note, first, something concerning the production of natural gas and products therefrom in the State of Texas according to information derived chiefly from the records of state agencies.

From the tax returns of producers and purchasers to the state comptroller for January 1941, it is determined that casinghead and other gas sold to natural-gasoline producers averaged about 0.86 cents per 1,000 cu. ft. in value at the well. It is also learned that the plants handling this gas utilized 75 per cent of the taxable gas produced in the state, affording an outlet for low-value natural gas and for casinghead gas and effecting the production of liquid products therefrom which otherwise would be largely wasted. Each of over 50 per cent of the 150 natural-gasoline plants operating in the state last year produced an average of less than 238 bbl., or 10,000 gal., of product daily and we all know that most of the plants could barely, if at all, continue to operate on the income derived. Introduced in the Texas Legislature since January were bills which, would tax the manufacture of natural gasoline, butane, propane, and other products 1 cent per gallon; would tax the production of the gas as high as ½ cent per 1,000 cu. ft. and would levy an additional tax against manufacturers of as much as ½ cent per 1,000 cu. ft. for gathering gas. Even the mildest of the bills would increase the tax on some of the gas as much as 1000 per cent or more! Now it is inconceivable that any legislator would seriously intend to raise taxes in any such degree or would intend a manufacturers' tax of 1 cent per gallon on 26-70 natural gasoline which averaged but 1.65 cents per gallon all of last year and which would mean more than 1 cent per 1,000 cu. ft., and would then add another ½-cent tax for gathering the gas. The records show all gas processed yielded an average of but 0.881 gal. per 1,000 cu. ft. Producers of gas and manufacturers of natural gasoline must see that their legislators know the true economic facts concerning their business else such tax bills as cited, all bearing emergency clauses which would make them effective immediately after passage will, perhaps even by July 1, 1941, undoubtedly stop manufacture of all natural gasoline except that necessarily recovered on high-pressure gas-distributing systems.

Lack Detailed Knowledge

We find that many Texans, even those engaged in handling gas and making gas products, do not have a comprehensive knowledge of the scope of these endeavors. Recent contacts with those interested in legislation for additional taxes on natural resources in this state have revealed a very great lack of knowledge of true facts among those who should be informed and who are responsible for the desire to establish equity in such taxation. We are led to believe that you who are engaged in these businesses have not always properly posted yourselves and in turn educated your local state representatives and senators to truly understand and care for your best interests in accordance with the aims of our democratic form of government. It was recently forcibly impressed upon us that great damage to an industry from taxation and other types of legislation can occur when such education is lacking. The duty of each of you to cultivate your legislators should be fulfilled and constantly attended. No effort can be so effective as your own local attention to these matters. Natural gasoline is extracted from gas produced in at least 93 counties in Texas and with the legislators from all these areas well posted as to the facts of the industry, its interests would, without doubt, always be dealt with fairly.

Efforts to Restrict Production

Would you care to give up your clean, convenient gas furnace or stove and again, if you have ever done so, cut wood morning and evening or carry and stoke coal? There is a pronounced effort indicated in federal circles and petitioned quite publicly and generally by many coal interests to restrict further production of natural gas and gas products, thus denying the advantages of these preferred fuels to the industrial and domestic users of these United States. It is even insinuated that national defense will be jeopardized if this be not done. Where would our automobile and our aviation be had such deterrents to progress have been advanced in their infancy? It seems quite true that coal has been set back with the advent of gas pipe lines and butane and propane for home and industry. So did our railroads decline, relying mistakenly and smugly on their former indispensability, with the rapid rise of motor transportation. Yet new blood is being infused into railroading and so, also, must our coal industry look alert and find its proper place in our economics — not through retarding competition by law, but by reviving and advancing on merit. I speak of this not alone because of a threat to our own industry but because of sensing a growing inclination to stifle free and open competition in this country—a curbing of the fundamental principle of freedom of progression and improvement for all people, already so strikingly demonstrated in the United States as nowhere else. While one advancement dislocates an outmoded industry, the very fact encourages another. With our former waste products butane and lighter materials, rising to some importance amid the vicissitudes of a declining natural-gasoline economy, now finding enlarging uses making for better living and better manufacturing, we, ourselves, are reaffirming this rule. We must resist this effort of our competing coal interests and we must urge our statesmen to disillusion them speedily.

One of the striking advances among new indus-

Up to specifications

The refiner has to sell his products on the buyer's specifications but it's mighty seldom he can buy his crude that way

He generally has to take what he can get and take it as is—specifications by Nature—and pay the seller's price for it

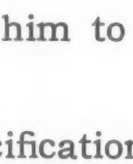
He can't even be sure of uniformity from day to day

But one thing he *can* be sure of

U. O. P. will help him to make the most of *any* crude

Whatever the specifications of his oil, Dubbs-cracking, catalytic polymerization and other Universal processes will give him the highest possible yield of wanted products to meet the buyer's specifications—whether the buyer is jobber or dealer or motorist—or Uncle Sam

Universal Oil Products Co
Chicago, Illinois



Dubbs Cracking Process
Owner and Licensor

tries, meeting the competition of coal, gas, and oil, is that of distributing the liquefied petroleum gases, butane and propane. Thirty-nine million gallons in 1933; more than 300,000,000 gal. in 1940! We who make these materials have little conception of the tribulations and the problems met with in designing equipment for the distribution and use of these fuels, the overcoming of prejudices, the creation of protective and the discouragement of ruinous legislation. Here was a budding industry tacking up its shingle, as it were, like an energetic young lawyer facing his first setbacks, but with courage enough to continue. This effort, after several false starts but now with an aggregate attained dollar value sufficient to merit designation as a distinct industry although already firmly established, yet has far to go. We should lend our cooperative attention to its further development as only one of the phases of the new era for natural-gas products, an era in which we may find the use of natural gasoline in motor-fuel blends only one of a number of important outlets.

Recycling Developments

The discovery of an increasing number of Gulf coastal high-pressure gas deposits, chiefly in Texas, some of which have low-oil reserves per acre in place, others of which yield only valuable condensates upon reduction of pressure, has given impetus to a new type of original production practice—recycling. The gas produced from such formations, with as little drop in rock pressure as feasible, is usually first separated from indigenous oils or retrograde condensates and then subjected to processing for natural-gasoline extraction. With no substantial market outlets for the residue from the only slightly reduced original gas, such residue is then compressed sufficiently for reintroduction into the formation from which it came. By proper selection of output and input wells and rates of flow the stripped gas can displace remaining virgin gas and oil, moving it always toward output points with minimum diffusion. Greatest ultimate production of liquid or liquefiable hydrocarbons may be thus attained, with the reservoir eventually left full of natural gas at a pressure not considerably less than the original formation pressure. The very close economies requisite for such production has forced this almost ideal method of producing oil and gas from the earth. With these new ventures have come new problems. New and dependable methods of appraisal of raw material must be perfected; underground behavior of large gas masses must oe better delineated and understood; production and extraction methods must be further improved; ways and means for more accurately measuring high-pressure gas must be found. The marked successes of recycling operations, yielding a production of but a few hundred barrels 2 years ago but now of more than 25,000 bbl., or 1,050,000 gal. daily from more than one billion cubic feet of gas, presage production, in a few years, of perhaps several hundred thousand barrels of almost motor-fuel-quality condensates. This prospect, influencing the controlled production of crude oil in an amount equal to more than twice the distillate or condensate recovery effected because of its near-gasoline quality, is alarming proration experts and regulatory bodies and thus apparently the greatest problem of all is introduced. Should recycling production be controlled and, if so, how much? All of these questions in one way or another, in my opinion, affect the natural-gasoline industry. Our association is joining in the solution of problems of recycling and I exhort our members to participate generously in the work.

Chemical means have been found for producing almost an endless variety of products from natural gas. Aside from the more familiar gasolines, liquefied petroleum gases, and the lately reformed superior fuels for internal-combustion engines, solids, lubricants, solvents, and many new raw materials for the chemical industry have been made available. Even methane may be converted, although not yet commercially so, to usable liquid fuel by pyrolysis, and there is indication that weight yields of conversion of natural-gas components of almost 100 per cent are not unreasonable. The prospect of gas potentiality is astounding! A million cubic feet of average natural gas weighs 28.3 tons and a glance at the statistics for last year reveals that the natural-gas production of the country by such means as described, could have met all the motor-fuel requirements of the country. Saying it in other language, not 1 bbl. of crude oil would have been necessary had all the natural gas yielded, by extraction and conversion, its potentially available liquid fuels.

Revolutionary Discoveries Forecast

All of these considerations point us, in our industry, to new and revolutionary discoveries and undertakings, if we are to persist. No one is going to bring us, full blown, the solutions to our problems or present us the plan of action. As we see the former utility of natural gasoline, based on its inherently superior qualities, depressed by the advances in motor-fuel technology and adaptations, we ourselves, must conceive and make the moves vital to sustenance.

I cannot overlook a line of commendation for our program committee and our secretary who have arranged this session of our association for you. I am sure, at the end, you will agree as to the merit of the program and the excellent quality of the talent appearing. Without detailing all the considerations which have been before them or the results attained, I wish also to acknowledge the splendid cooperative work of our several committees. Herein really lies the very life of the association and it is almost shameful not to mention every committee and name every member. I know of no more forceful way in which to express our appreciation of the Natural Gasoline Supply Men's Association than to say it would, indeed, have been like the blow of finding an old friend gone had they not been with us here in keeping with their annual custom. Each of you, partaking of their hospitality, should genuinely express your personal thanks to every member of that group not too busy to listen.

Now, suggesting you reflect again on the past effectiveness of the Natural Gasoline Association of America, reaffirming my own faith in its further accomplishments and reiterating my pleasure in your fine support in the past biennium, I bow out as your president.

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Natural Gasoline Yields Numerous Byproducts

By FRANK H. DOTTERWEICH
Associate Professor, Natural Gas Engineering,
Texas A. & I.

THE growth of the petroleum industry is being accompanied by the rapid expansion of one of its most important segments, the natural-gasoline division. The growth of the natural-gasoline industry, in turn, has made available increased amounts of byproduct natural gas which has been marketed as a fuel and source of energy and more recently as a chemical raw material and reactive agent. It is of extreme importance to the natural-gasoline industry, with large volumes of byproduct natural gas, to be aware of the potentialities of this raw material.

Natural gas as produced is a mixture of hydrocarbon and nonhydrocarbon gases. The hydrocarbon gases may include methane to heptane and the nonhydrocarbon gases, carbon dioxide, helium, nitrogen and hydrogen sulfide. These gases can be separated, by modern methods of extraction and fractional distillation, into the following groups: dry gas, liquefied gas, and natural gasoline.

Dry gas consisting of methane to propane and liquefied gas of propane to butane are the products by which the firm foundation of the natural gas and bottle-gas industry, respectively, have been founded.

Dry natural gas and more recently bottled gas have been used as a fuel and source of energy and their expanding use in these fields should be accelerated by the recent development of the combustion gas turbine. Gas-operated air conditioners and the modern gas-operated radios are examples of the many domestic and industrial duties this fuel may perform. In addition to its energy use dry natural gas and bottle gas combined with the nonhydrocarbon group may be used as raw materials for the production of synthetic organic chemicals.

The nonhydrocarbon constituents, with the exception of carbon dioxide, are found in natural gas in relatively small amounts. Hydrogen sulfide, which is objectionable due in part to its corrosive nature, may be removed and marketed for agricultural uses.

The hydrocarbon groups of dry natural gas and bottle gas which are byproducts of the natural-gasoline industry must be converted into other products before they may be used to manufacture useful products. There are four methods of conversion, namely: decomposition, oxidation, halogenation and nitration.

Decomposition consists of splitting the hydrocarbon by thermal, catalytic and electric means. Processing natural gas by this method yields many synthetic raw materials which may be used in the production of many products, chief of which are plastics, synthetic rubber, motor fuel, explosives, dyestuffs and hydrogenated vegetable and mineral oils.

Many chemical products are produced by oxidation. Oxidation may be defined as the introduction of oxygen into the hydrocarbon molecule by the aid of heat and catalysts. This method insures the production of many alcohols, aldehydes, ketones and ethers which are the chemical raw

Condensed from an address before the meeting, April 23-25, of the Natural Gasoline Association of America, Dallas, Tex.

materials of many modern products.

Halogenation consists of the reaction of hydrocarbon molecule with a member of the halogen family, this reaction being activated by heat, catalysts, and light. Chief of these useful products could be tetraethyl lead, and antiknock compound; vinyl chloride and vinyl acetate for the manufacture of plastics and sodium polysulfide which is used in the manufacture of thykol, a rubber substitute.

Nitration defines the method by which hydrocarbon gases and nitric acid in the vapor phase are allowed to react and by the aid of heat a series of nitro-compounds are formed, such as nitromethane, nitroethane, nitropropane and nitrobutane. These compounds find use as organic reagents and recently as raw material for explosives. Development of the nitro compounds has just started and it is predicted that these agents will create a new and dynamic branch of industrial and organic chemistry.

Many raw materials may be obtained by the decomposition or cracking of natural gas. Included is the method of dehydrogenation. Methane, a major constituent of natural gas, can be cracked to give unsaturated gases and aromatic liquids, but at present the methods available are extremely difficult and inefficient. Under these conditions, methane is at present used as a major raw material to produce hydrogen for hydrogenation purposes and in the manufacture of carbon as a pigment in ink, paint, and as a filler in compounding rubber. Ethane and the heavier hydrocarbons, however, produce many olefine hydrocarbons on being cracked. It is reported that one chemical company is producing from these olefins more than 100 products including 24 different kinds of alcohols, 4 ketones, 23 esters, 13 amines and 35 other chemicals.

Dehydrogenation and Polymerization

The dehydrogenation and polymerization of natural gas is now being used by oil companies throughout the country to produce super antiknock gasolines. Recent advances in this field is the announcement of Neohexane, a new synthetic hydrocarbon manufactured by thermal alkylation of isobutane and ethylene. This fuel has an octane rating of only 94, however, its high lead susceptibility and high volatility make possible the production of fuels with 115 octane rating.

Newer type of synthetic rubbers all require butadiene and production of this compound is rapidly increasing.

The rapid development of the plastic industry is attracting widespread attention and this astonishing growth is clearly verified by the report that this industry has increased 36-fold since 1922.

In the manufacture of plastics, on the basis of raw materials employed, three classifications may be used: natural resins, semisynthetics, and synthetics. Ethylene is an important raw material for many types of synthetic resins. This material used in the production of many plastics is obtained from cracked natural gas and refinery gas.

Ethylene is the source of an important group of plastics based on vinyl chloride. Vinyl chloride may be manufactured from ethylene by the direct addition of hydrogen chloride to acetylene. In addition and closely related to ethylene chloride is vinyl acetate. This compound is now chiefly manufactured from acetylene and acetic acid, the acetylene being produced from carbide, however, the future should see large quantities of acetylene, used in this process, produced from natural gas.

The most amazing development in this new field of resins is the entrance into the textile field. When the percentage of vinyl chloride is 90 per cent and mixed with vinyl acetate and then polymerized to give a compound with a molecular weight of about 20,000, a new substance, vinyon, is formed. This product has unique film and filament-forming properties making possible the production of vinyon filter cloth, bathing suits and other textile products.

Many useful products which may be manufactured with natural gas as a raw material have not been mentioned in this paper. The many possible products as given, however, indicate the tremendous potentialities of natural gas as a raw material. The best insurance to recover these important raw materials and make them available to industry is active research work.

In response to the vital and immediate need for fundamental research felt by the gas industry of the United States a special committee of the American Gas Association, formed about 2 years ago conducted a study and made a report to the association on the subject, recommending the establishment of a research institute by the industry. The same committee, upon the discharge of its duties, constituted itself a group which continued its studies of the means by which research could best be accomplished in behalf of the gas industry and, after a great deal of study and investigation, drafted a plan for the establishment of an institution to be called the "Institute of Gas Technology." This plan is now under consideration by member companies of the gas industry and may become realized within the present year.

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Natural Gasoline's Part In National Defense

By ELMER F. SCHMIDT
Vice President, Lone Star Gas Co.

FROM the first commercial production of natural gasoline in the Sisterville field in West Virginia in 1903 and at Tidioute, Pennsylvania, in 1904, down to the present date, we can read a romantic story of progress through years of success and failure, experimentation, research, and invention. We can proudly take cognizance of the fact that in the program of national preparedness the natural-gasoline industry is accepting its full share of the responsibility in its stride.

We find that in 1939, 684 plants having a value of more than $90,000,000 processed over 2 trillion cubic feet of natural gas to produce more than 2 billion gallons of natural gasoline which had a value in excess of $90,000,000. With the advent of recycling plants, the statistics for 1940 will far exceed 1939.

In excess of 141,400,000 gal. of liquefied propane and butane gases were manufactured in natural-gasoline plants in the United States in 1937, 165,200,000 gal. were marketed in 1938, in 1939 this was increased to 223,600,000 gal., and in 1940 a further increase to 300,000,000 gal. As gases, these hydrocarbons are being delivered through mains to consumers in some 200 communities in 30 states supplying in excess of 60,000 customers for domestic purposes. Their use as fuel in industrial internal-combustion engines has grown steadily and they have proved to be an excellent fuel in heavy-duty automotive equipment and power engines. There is a widely diversified market for them in the chemical field and in the manufacture of rubber, soaps, varnishes, and perfume, and we may expect expanding uses in the future. The potential liquefied petroleum gas supply is 33 times the present demand.

The natural-gasoline industry is an alert and expanding industry, employing in excess of 15,000 men with an annual payroll of something like $30,000,000. Most of the industry's 684 plants are far from centers of population. Their products are sold to refineries and through them reach distributing stations as an essential component part of motor fuel.

Use of natural gasoline in processing of motor fuels is now one of the major operations of the petroleum industry. Authorities have estimated for approximately each 18 gal. of natural gasoline produced, a barrel of oil is saved. This means that the industry has prevented extinction of crude-oil reserves by something in excess of 1 billion barrels.

We can be proud of the part our industry is taking in the preparedness program. We can furnish the fuel, the energy, many of the chemicals and the lubrication that creates speed and mobility in carrying out the defense program or of actual warfare. There is hardly anything in connection with this program that oil, and gas or its byproducts, fail to touch.

The natural-gasoline industry is the backlog in the production of high-octane gasoline that makes our air force the fastest and most efficient in the world.

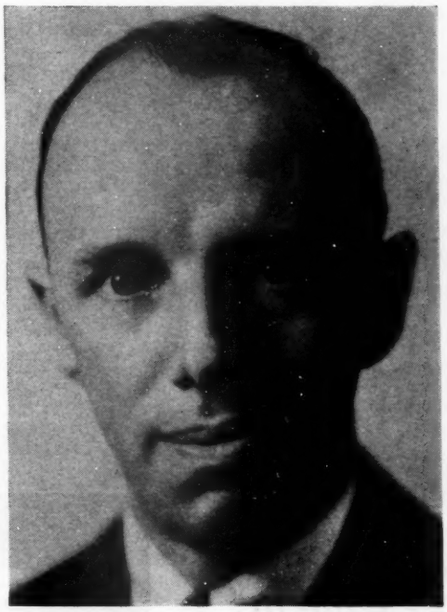
The program will create many new problems that will make it necessary to devote double time and triple thought to our operations. Management will have many worries and we must be tolerant and cooperate with it. Many of our operations will not be profitable during this wartime emergency. It is certain that the natural-gasoline industry, the natural-gas industry, and the oil industry are marching forward in unison for the defense of our nation and our democratic form of government.

However, a word of caution should be sounded. In this present emergency industry is on trial. If defense needs and requirements are not anticipated and adequately taken care of by private enterprise, Government will take over. When the Government steps into our industries, we approach the dictatorship form of government where free enterprise and individual initiative ceases to exist. It is not difficult to find tendencies in this direction already.

Condensed from an address before the meeting, April 23-25, of the Natural Gasoline Association of America, Dallas, Tex.

Close Fractionation Needed to Recover Isomers From Gas

By H. W. HARTS
Vice President, Warren Petroleum Corp., Tulsa



H. W. HARTS

N.G.A.A.—**Importance of isobutane as a source material for manufacture of fighting-grade aviation gasoline makes this paper on recovery of that fraction in natural-gasoline-plant operation particularly timely. This paper, presented April 24 at the annual meeting of the Natural Gasoline Association of America, reviews close fractionation methods essential to recovery of isobutane and other special products in natural-gasoline operations.**

ABNORMALLY low prices and declining income experienced by the natural-gasoline industry during the past few years have caused several manufacturers engaged in this phase of the oil business to seek additional revenue through any economically feasible secondary operation connected with the manufacture of the various grades of natural gasoline.

First came propane and butane, the two related products which either were cut separately or in some cases merely considered as a conglomerated overhead, and which were sold for any of the various uses to which are put the liquefied petroleum gases.

As the markets began to absorb these two closely related components the manufacturers sought still additional income by making preparations for the isolation of various isomers which occur in relatively small quantities in practically all natural gas.

The increasing demands made upon refinery for higher-octane motor fuels, and the new manufacturing processes installed by the refiners and which necessitated the use of the isomers, combined to create an immediate demand which was met by the natural-gasoline manufacturers as, one by one, they installed equipment to manufacture isobutane and isopentane.

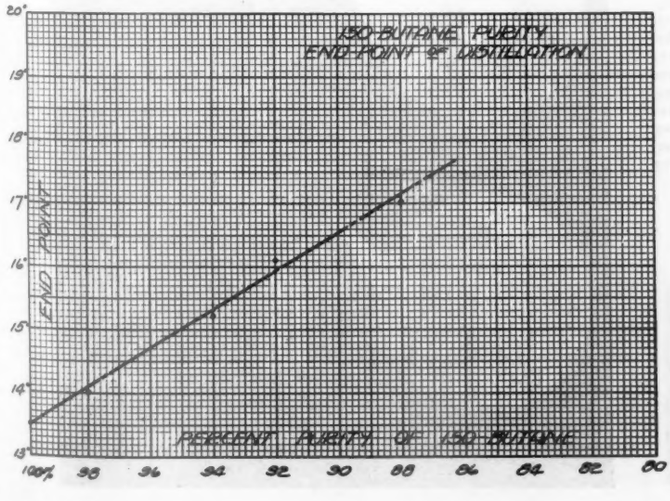
The isopentane, being an integral part and an extremely desirable part of the natural gasoline, has not been isolated as extensively as the isobutane, which previously had been either a waste product or a filler in the butane-propane mixtures.

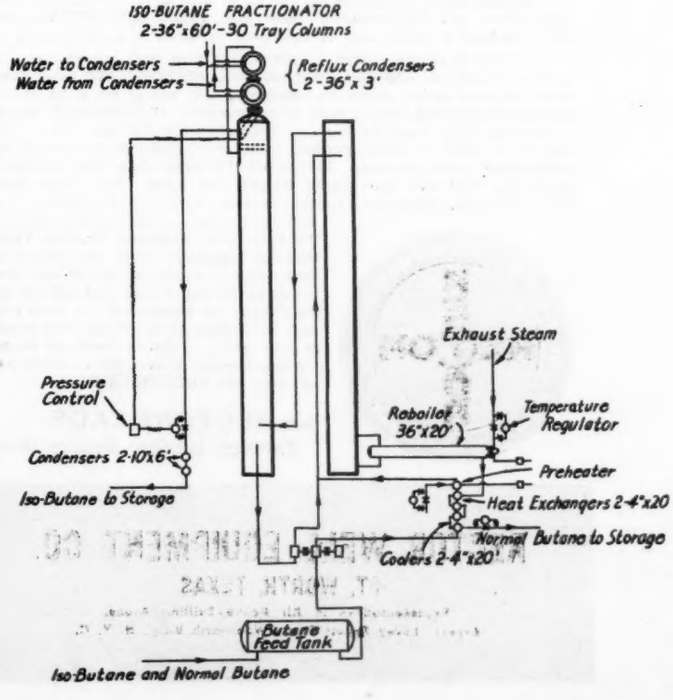
The isobutane suddenly acquired a considerable value with a ready market, due to the various new refining processes. The manufacture of this product, however, was not the very simple fractionation step necessary in the case of butane and propane. Extremely expensive equipment and accurate control were necessary, so that the return on the investment was not the desirable picture that had been indicated at first glance. This was due not only to the cost of installation and operation of manufacturing equipment, but also to the cost of storage, transportation and testing. The mere fact that the specifications are so exacting necessitates low-temperature fractionation on each shipment made, and the slightest deviation in the tower control may conceivably and easily throw all of the products in storage off specifications.

Inasmuch as isopentane is less commonly fractionated than isobutane we will consider that production first. One plant in which data were obtained introduces a raw feed of 100,000 gal. daily to the grade-gasoline fractionating tower from which the butanes and lighter are separated from the pentanes and heavier. The pentanes and heavier from the base of tower, having a volume of 30,500 gal., are pumped to a second fractionating column operating at a pressure of 50 lb. which consists of two columns each 82 ft. high, containing a total of 70 trays and requiring a reflux ratio of 22:1 to separate the isopentane with a volume of 5,350 gal. as overhead, from the

Right: Control of reflux, pressure and temperature are vital to close fractionation

Below: Chart showing relationship of end point and character of isobutane





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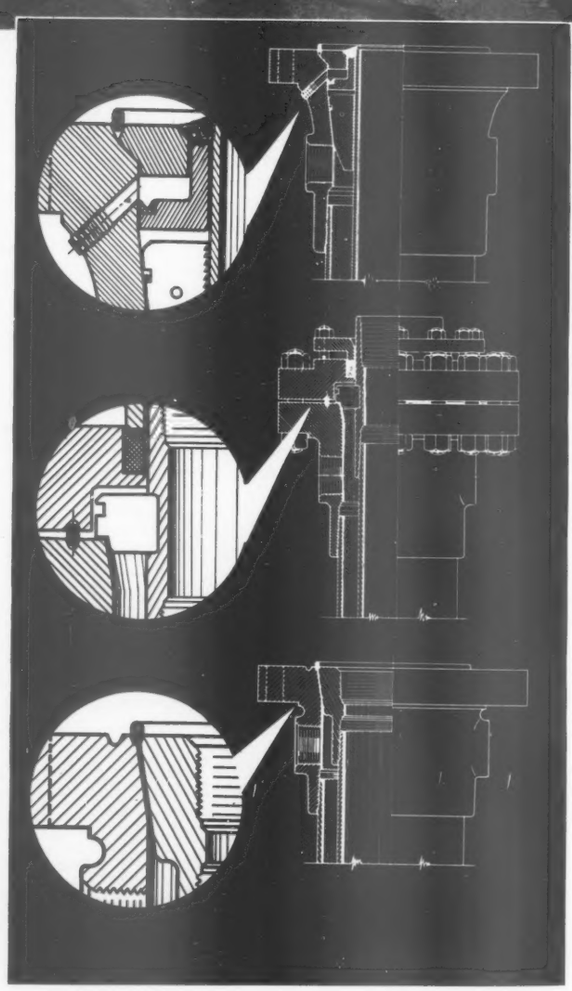


CONDITION OF ISOPENTANE COLUMN

	Grade column	Isopentane column	Debutanizer
Size	3 by 60 ft.	2.5 by 82 ft.	20 in. by 74 ft.
Trays	30	70	30
Operating pressure	150 lb.	50 lb.	100 lb.
Kettle temperature	313°	202°	216°
Top temperature	135°	170°	162°
Reflux ratio	4-1	22-1	7-1
Kettle surface	500 sq. ft.	230 sq. ft.	100 sq. ft.
Reflux condenser surface	4,500 sq. ft.	800 sq. ft.	400 sq. ft.
Steam hp. required	300	128	58.6

	Liquid volume	
Feed to isopentane column:	Per cent	Gallons
Normal butane	.98	300
Isopentane	19.67	6,000
Normal pentanes and heavier	79.35	24,200
Total	100.00	30,500
	Isopentane, liquid volume	
Overhead product:	Per cent	Gallons
Normal butane	5.61	300
Isopentane	93.46	5,000
Normal pentane	.93	50
Total	100.00	5,350
Kettle product:	Per cent	Gallons
Isopentane	3.98	1,000
Normal pentane and heavier	96.02	24,150
Total	100.00	25,150
Debutanizer kettle:	Per cent	Gallons
Isopentane	99.00	5,000
Normal pentane plus	1.00	50
Total	100.00	5,050

normal pentanes and heavier which leave the base of tower to storage. Since the isopentane that is taken overhead has only a purity of 93.46 per cent, to make a 99 per cent pure product it is necessary to pump this overhead to another fractionating tower operating at a pressure of 100 lb., 74 ft. high and containing 30 trays. This column requires a reflux ratio of 7 to 1 to eliminate the normal butane as overhead product which is returned to the feed to the grade column. The 99 per cent isopentane is taken from the base of tower to storage. This debutanizer, or secondary isopentane column, is necessary in order not to lose any isopentane in the grade column and still manufacture 99 per cent pure isopentane. The overhead, or butane, is returned to the feed of grade column.

Isobutane

We now enter into the manufacture of isobutane, which is uppermost in most of our minds at the present time. Isobutane is used primarily in the manufacture of high-octane gasoline by the process known as alkylation. In this process the normal butane has no effect on the alkylation reaction, but its presence in appreciable quantities is objectionable in that it increases the size of the equipment necessary to produce a given amount of alkylate. Therefore, the natural-gasoline manufacturer is confronted with the problem of manufacturing a product as pure as is economically possible. The purer the product the more desirable to the refiner and therefore the more valuable to the manufacturer.

The fact that a normal butane mixture with a boiling point of 29.6° F. or 3° F. under the boiling range of normal butane indicates 10 per cent in butane, gives an idea of the accuracy necessary in column operation.

Therefore, it is obvious that a variation of only 3° in the boiling point would permit the inclusion of 10 per cent of the isobutane in the base product of the column. Since, in many instances, the feed to the column would not contain much more isobutane than this, a depression of 3° in the boiling point would mean a loss in production of practically all the isobutane. Any failure of the temperature controller that would permit the temperature at the base of the column to rise above the temperature required by the operating pressure of the column would give results more disastrous in that normal butane will be thrown overhead as an impurity to a degree limited only by the heat capacity of the reboiler. Since the reboiler pressure is definitely related to the temperature, it is equally apparent that rigid control of the reboiler pressure is essential. In actual practice, it is desirable to locate the point of control, which actuates the pressure controller, as closely as possible to the point of temperature measurement, which actuates the temperature controller.

In ordinary stabilizer operation it is usually satisfactory to control the pressure at the top of the column, or even in the reflux tank, but in fractionation of the isobutane the variations of pressure between the top and bottom of the column are sufficiently large to produce serious deviations in the pressure in the base of the column, if the pressure is held constant at any other point in the system.

In ordinary stabilizer operation, it is customary to control the pressure of the system by means of a motor valve which releases noncondensable gas from the reflux accumulator tank. In the production of isobutane as an overhead product where total condensation takes place, there will be no noncondensable gas, and the motor valve which controls the pressure must be located between the tower and the reflux condenser.

Control of Reflux

In ordinary stabilizer operation, it is customary to control the reflux at a fixed rate by means of a flow controller and withdraw the condensed overhead product from the reflux tank by means of level controller. If we apply this same system of control to the isobutane column we run into serious difficulties in the form of an unstable condition which causes the isobutane to be produced in a series of cycles with the product badly off specification during a portion of each cycle. The reasons for this may be apparent from the following: Let us assume that we have the column in perfect operation, and that the reflux rate, the rate of production of overhead product, and, consequently the reflux ratio, are correct. If for any reason, such as change in composition of feed, the volume of isobutane passing overhead from the column should decrease there would automatically be an increase in reflux ratio, since the reflux ratio is constant. This increase in reflux ratio will tend to establish a new set of compositions on the various plates in the tower which are richer in isobutane. This momentarily decreases the production of isobutane overhead and the reflux ratio increases proportionally. This process continues until we have no overhead product and the condition of total reflux exists, all isobutane present in the feed being consumed in enriching the composition of the plates and displacing normal butane, which is forced out of the column as base product. After due time, the plate compositions are established which are consistent with the total reflux, and excess isobutane be-

(Continued on Page 141)

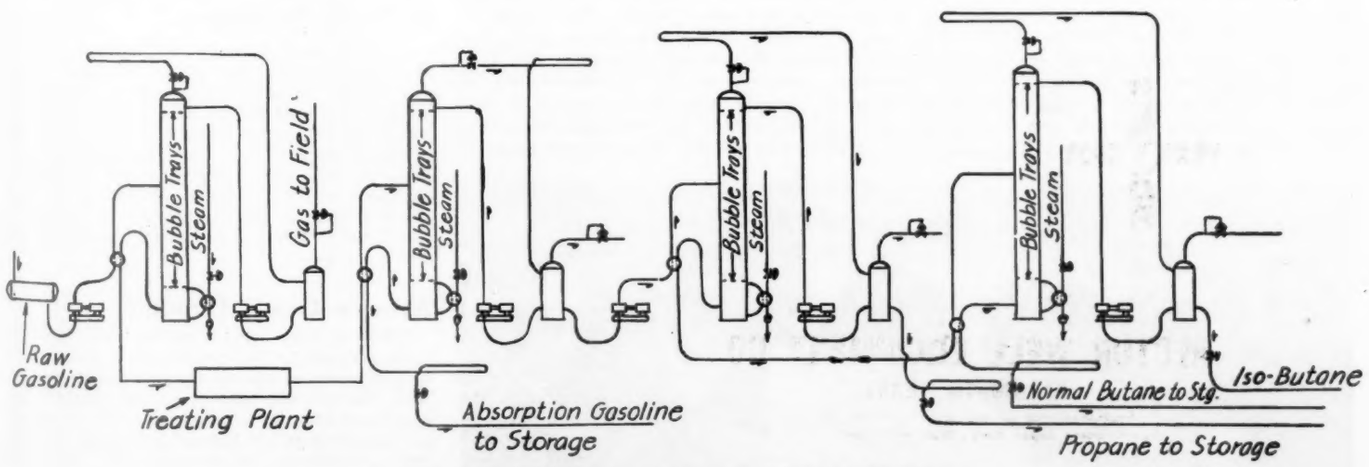


Diagram of plant recovering propane, normal butane and isobutane

The Annual Statements Say...

Spend All Their Time TESTIN
tory workers at Whiting who specialize in tests to det
whether materials and products are fully up to standard
e refineries there are 232 such workers and they make
00 tests a month. Their verdict is final. Only they can
the stamp of approval which permits shipments to pass
gh the refinery gates.

Standard research workers leaving for lunch, a picture used on a mailing piece to stockholders to illustrate the growing emphasis placed on development

Standard of Indiana

MORE liberal use than ever is made this year of pictures, graphs and charts to show results of 1940 operations. The Standard of Indiana group's sales increased to 125,298,000 bbl. and a value of $349,618,000, without excise taxes, which amounted to an additional $95,799,000. The company paid $198,000,000 for raw materials, transportation and other operating expenses. Wages paid employes totaled $69,000,000 and $22,000,000 went for direct taxes. Deposits in the annuity trust fund amounted to $3,750,000 and $35,000,000 was set aside for depreciation, depletion and other contingencies.

Investments in new properties and equipment last year totaled $48,000,000, covering these principal items: 431 new wells; 496 miles of pipe lines in Texas, Kansas, Missouri and Illinois and other transportation facilities. The company rebuilt or replaced 391 service stations in a market rehabilitation program.

Plans for the current year include construction of products pipe lines from Council Bluffs, Iowa, to Sioux Falls, S. D.; Burlington Junction, Mo., to Des Moines, Iowa, and Whiting, Ind., to Indianapolis, as well as construction of an undisclosed number of refinery units.

Concerning suits brought by the Government against Standard of Indiana and 367 other oil companies, the report comments that the aim of the suit is drastic and if gained would render the company and the industry "impotent to function economically and to serve the public efficiently."

One of the charts included in the report based on 1940 figures shows that of every dollar collected by the group 42.4 cents go for raw materials, transportation and other costs; 25.7 cents for taxes, 16.6 cents for employes' pay and benefits, 7.6 cents for depreciation and 5.1 cents for dividends. The balance of 2.6 cents was retained for future use.

Among the principal additions to manufacturing equipment were a 12,000-bbl. unit at Whiting for improvement in reduction of residual oils and a catalytic reforming unit (hydroforming plant) at Pan American Petroleum & Transport Co.'s refinery at Texas City, Tex.

Research, development and testing activities of the company engage 444 workers and of these 249 are trained scientists devoted to search for new ideas, methods, processes or products.

Consolidated Oil Corp.

A HINT that a major crude-oil pipe-line-construction job for the Rocky Mountain section eastward may be undertaken in the future was contained in the company's statement.

"Circumstances," relates the annual report, "may compel us to build our own line from Wyoming eastward."

The statement accompanied a brief discussion of the position of subsidiaries in Wyoming. The most important part of the company's 147 miles of new lines laid in 1940 was in Wyoming where the company expanded production appreciably. Deliveries of Wyoming crude to the company's Kansas City and Chicago refineries are made through the common-carrier facilities of Stanolind Pipe Line Co. Runs through the Stanolind system totaled 750,000 bbl., the report stated, since "the recent completion of the Wyoming lines."

Additions to capital assets of the company last year totaled $29,180,000, an increase of about $9,000,000 over the preceding year. The principal items were for drilling and other capital expenditures on oil and gas properties, $6,780,000; lease purchases, renewals, and rentals, $6,220,000; pipe-line additions and improvements, $1,621,000; improvement of manufacturing facilities, $5,158,000; marketing, $5,570,000. Other capital expenditures include advance payments of $3,620,000 on account of tank ships.

Additions and improvements to manufacturing facilities include the wax plant at Houston, Tex., costing $1,700,000 and the alkylation plant at East Chicago, Ind., costing $1,000,000.

Potentialities of the Venezuelan Petroleum Co. discovery producer in the State of Monagas were emphasized. Consolidated owns a majority interest in Venezuelan Petroleum Co. which has a concession of about 24,000 acres containing the well indicating discovery of a new field. The company is surveying location of a 100-mile line to the northern Venezuelan coast where improvements are being made to a deep-water terminal.

Terms were reviewed of the settlement with the Mexican Government for expropriated oil properties of subsidiaries. Four installments of $1,000,000 have been received against the total cash consideration of $8,500,000. The tankers now under construction for Consolidated will add more than 140,000 tons to the existing fleet and will cost approximately $24,400,000. "Building of certain gasoline pipe lines to reduce cost of transportation of refined products," declares the report, "is under way, and the building of additional lines is contemplated."

Mid-Continent Petroleum Corp.

AN improvement program on the refinery at West Tulsa was completed and the new units made possible a substantial reduction in refining costs which is reflected in the increased profits.

The average wholesale price of gasoline in the Mid-Continent, says the report, was the lowest since 1933 and, because of the unprofitable price, the company declined a large volume of business during the year.

The invasion of Western Europe, Scandanavian and Mediterranean areas caused a decline in the export business in lube oils and a resulting price reduction.

The company supplies large quantities of solvent lubricating oils to Great Britain for its army, navy and air forces in different parts of the world.

The report pointed out that use of pipe line in transporting crude oil and refined products enabled the petroleum industry to release railroad equipment, ships and trucks for the transportation of other necessary commodities. This statement was made in connection with mention of Mid-Continent's ownership of the Great Lakes Pipe Line Co.

Oil Company Annual Reports

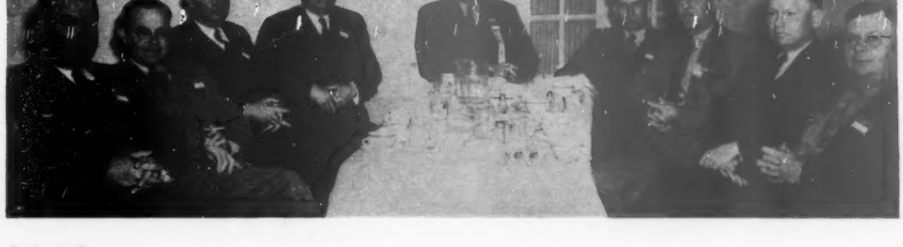
(Compiled by Carl H. Pforzheimer & Co., New York)

Consolidated Oil Co.		
1940	$3,792,602	$0.28
1939	7,540,881	0.55
Imperial Oil Co., Ltd.		
1940	17,638,717	0.65
1939	19,250,071	0.71
Mid-Continent Petroleum Corp.		
1940	2,967,394	1.60
1939	2,650,501	1.43
*Total 33 companies 1940	$218,046,715	
1939	207,303,088	

*Including companies previously reported.

●

New officers and executive committeemen of the Permian Basin (Texas) Association held a business session over the breakfast table last week before disbanding from the annual meeting held in Lubbock, Tex. Around the table, left to right, are: Don Davis, Midland; Tom B. Duggan, Jr., Lubbock; Carl Rountree, Lamesa; M. C. Lindsey, Lamesa; Paul C. Teas, Lubbock, new president; Hamilton McRae, Midland, retiring president; Ben F. Le Fever, Big Spring; Deen Nowlin, Tahoka; and Ralph Oberholtzer, Seagraves. Officers and committeemen not present for the picture are: R. L. Cannon, San Angelo; Charles C. Thompson, Colorado City; and L. A. Neal, Odessa, vice presidents; William R. Sewell, Levelland; John D. Mitchell, Odessa; Cliff Wiley, Big Spring; Fred Ellison, Fort Stockton; B. H. Hayward, Big Spring, and Frank Kelley, Colorado City, of the executive committee.



Pine Prairie Dome Revived By Flank Production

HOUSTON, Tex., Apr. 22.—C. & I. Production Co. 1 Evangeline Mineral Co., on the east flank of the Pine Prairie dome, Evangeline Parish, Louisiana, opened a new field for the Louisiana Gulf Coast district as the well flowed pipe-line oil on drill-stem test at 8,288-36 ft., and screen and liner is being set for final. The sand section was tentatively identified as the Sparta, and the completion is expected to result in an immediate drilling campaign, as protection around the well is held by several companies. (See p. 119, this issue.)

Aviation Gas in Canada

TORONTO, Ont.—Aviation gasoline is now being produced in Canada by the Imperial, British-American and McColl-Frontenac refineries. Production of airplane fuel from Turner Valley crude was commenced a few months ago following installation last year of aviation-gas equipment at the Imperial and British-American plants at Calgary. The output supplies air-training schools in the three prairie provinces.

Refinery Expansion

Mid-South Acquires Site For Mississippi Refinery

JACKSON, Miss.—Site for Mid-South Oil Refining Co.'s proposed plant at Jackson was purchased here recently for a consideration of $14,100. The tract, consisting of 94 acres, is north of Jackson and lies on each side of the Yazoo & Mississippi Valley Railroad in Hinds County.

Harold S. Christian, Dallas, Tex., president of the company, is scheduled to reach Jackson in a few days to supervise the start of refinery construction.

Plans call for completion of the plant, which will have a capacity of 10,000 bbl. daily, in the fall of this year.

J. M. Griffin, secretary of the Mid-South company and the official consummating negotiations for the plant site, said John Hall, chemical engineer, will be in charge of the refinery when operations are started.

Mr. Hall formerly was associated with Union Carbide & Carbon Chemical Co. at Charleston, W. Va.

Imperial Adding to Lubricating-Oil Capacity

The program of doubling productive capacity for lubricating oils launched late last year by Imperial Oil, Ltd., also involves expansion of facilities to meet expected increased requirements for high-grade aviation-lubricating oils.

Imperial added to its refinery capacity materially during 1940. A new process, called "high-temperature suspensoid catalytic cracking," for the production of high-octane gasoline was put in operation at Sarnia. The process, according to G. Harrison Smith, president of Imperial, is a development of the company's research department.

"In effecting a great improvement in octane quality of motor gasolines, it involves fundamental features which will be of value in further developments now being studied," Mr. Smith added.

Refineries of the company, in 1940, processed 16 per cent more crude than in 1939, whereas the total of crude oil processed by all refineries in Canada was approximately 13 per cent more than in 1939.

A reduction in revenue from investments in subsidiary companies was principally due to the discontinuance in 1940 of a special dividend disbursement which had been paid from accumulated earned surplus by International Petroleum Co., Ltd.

Idaho Refining Increases Runs of Montana Crude Oil

Idaho Refining Co., Pocatello, Idaho, has contracted with producers in the Cut Bank field of Glacier County, Montana, for daily delivery of 500 bbl. additional crude. The company has been a regular purchaser of 700 bbl. daily from the Cut Bank field and terms of the new contract raise the company's requirements to 1,200 bbl. daily. The new oil from the Cut Bank field will replace crude previously obtained in the Lance Creek, Wyoming, field.

Parties to the new crude contract included H. D. Moyle, Salt Lake City, Utah, president of Idaho Refining Co. and Inland Empire Refineries, Inc., and Don Gerstenberger, Spokane, Wash., superintendent of the Inland Empire.

Ohio Oil Co. May Shut Down Refinery at Fort Worth

Withdrawal of Ohio Oil Co. as a purchaser of crude oil in Eastland, Stephens, Palo Pinto, and Erath counties in Central West Texas effective May 10 was announced last week. The move is interpreted as a forerunner of cessation of operations at the company's Fort Worth, Tex., refinery. Currently, Ohio Oil is purchasing about 3,400 bbl. of crude daily in the four counties turning it to Illinois Pipe Line Co. for transportation to its Fort Worth refinery.

The pipe-line company will continue to gather and transport crude from wells to which it is connected in the four counties delivering it to other purchasers. Magnolia Petroleum Co., which is in final stages of expanding its refinery in Fort Worth, is reported planning to take over the functions of Ohio Oil as the purchaser. Ohio Oil has been gradually withdrawing from the retail-marketing field in southwestern states for several months.

Bondholders Take Over Assets of Bradford Plant

BRADFORD, Pa.—Bondholders have taken over assets of Bradford Oil Refining Co., leaving in doubt the future operating status of the plant here, which has a capacity of 2,500 bbl. daily. Facilities of the refinery include a true-vapor-phase cracking unit capable of handling 900 bbl. daily.

The Bradford company's plant has been idle since the first of the year, although liquidation of inventories has progressed through the present. Last week, J. von Carlowitz, vice president and treasurer, announced appointment of C. R. Kerr as sales manager.

Natural Gas

Natural Gas Pipeline Co. Wins Relief in Rate Order

Natural Gas Pipeline Co. of America and Texoma Natural Gas Co. have been relieved of a Federal Power Commission order to reduce their operating expenses $3,750,000 annually by a decision from the U. S. Circuit Court of Appeals at Chicago.

The court, last week, upheld the contention of the companies that their period of amortization should extend from 1938 to 1954 and not from 1,930 to 1954, as the F.P.C. ruled.

The court also held that in ordering lower gas rates, the F.P.C. did not allow for the companies' "going value." The companies asked that their "going value" be set at $8,500,000 annually, so that a reserve fund might be built up to protect against the speculative nature of the enterprises. The decision on operating expenses grew from efforts of consumers in the North to effect a reduction of rates by hitting at the gate-rate charges of Natural Gas Pipeline and Texoma.

The opinion held the companies should receive an allowance for the "skill and courage" of the men who risked their money and efforts in a speculative venture. The project called for the construction of a 2,000-mile line from Texas to Chicago to transport gas from a source which the companies expect to be exhausted by 1954.

The court held that the amortization period should begin in 1938, when Congress passed laws regulating the operation of gas companies, instead of from 1930 when the companies were organized.

Oil-Import Quota Filled By One Group on April 5

The tariff-rate quota for the calendar year 1941 on imports of crude, topped crude and fuel oil, the produce or manufacture of countries other than Venezuela, Netherlands and Colombia, was filled during the week ended April 5. This classification applies chiefly to Mexico.

Under the quota provisions of the trade agreement with Venezuela, not more than 138,587,400 gal. of such petroleum and fuel oil may be entered, or withdrawn from warehouse, for consumption at the reduced rate of import tax of ¼ cent per gallon during the current calendar year. Imports for consumption in excess of the quota are dutiable at the full rate of ½ cent per gallon.

Maritime Commission Plans Purchase of 72 Tankers

NEW YORK, Apr. 22.—The United States Maritime Commission has awarded a contract to the Sun Shipbuilding and Dry Dock Co. of Chester, Pa., for the construction of 72 tankers as part of the $500,000,000 allocation of lease-lend funds. Announcement of the award was made by John G. Pew, president of the ship-building company, who said that expansion of the Sun yards to accommodate the order will be undertaken immediately. The first keel is expected to be laid early in July and the first of the new tankers to be delivered within 9 months.

In addition to the 72 tankers contracted by the Maritime Commission, 69 others are being built in United States shipyards by private companies. Construction of the 141 vessels will entail an aggregate expenditure of $350,000,000. The present program will be the largest in the country's history.

Natural Gasoline

Phillips Petroleum Buys Balco Plant in Dill Pool

Phillips Petroleum Co. has purchased the Balco Gasoline Corp. natural-gasoline plant in the Dill field, Okfuskee County, Oklahoma, paying approximately $150,000 for the facilities. The plant, which has a capacity of 5,000,000 cu. ft. of gas daily producing 10,000 gal. of natural gasoline, is in 2-11-8.

The productive area of the Dill field recently was extended. If development and production warrant, Phillips may expand the plant to double its present capacity.

Loco Hills Repressuring Plant Contract Awarded

HOBBS, N. M.—Contract for construction of a $250,000 repressuring plant in the Loco Hills field, Eddy County, New Mexico, has been awarded to Sam Sanders of Artesia, N. M.

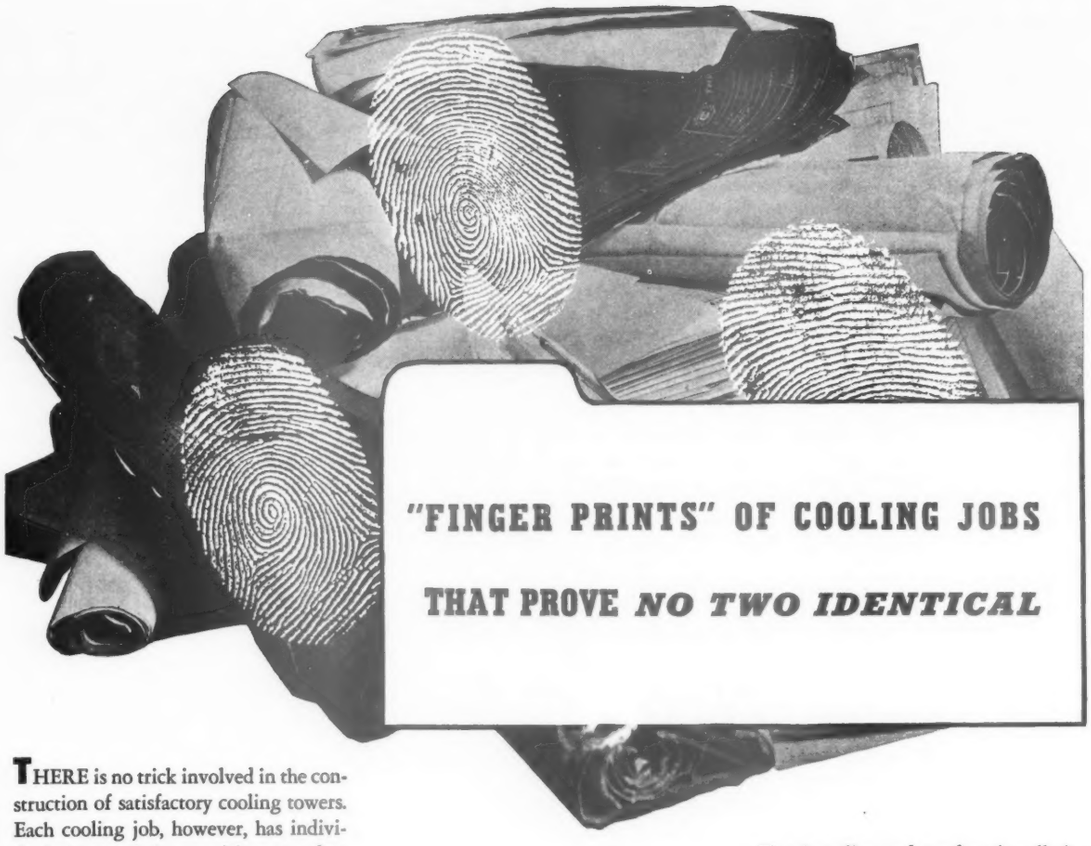
Construction is scheduled to start the first of May. The Loco Hills Repressuring Association, participants in which control 130 of the field's 160 producing wells, has retained Charles A. Aston, Wichita Falls, Tex., consulting geologist, to supervise the engineering phases of the project.

Republic Completing Expansion of Gulf Plant

Republic Production is completing addition of one compressor to its repressuring plant for the Joe's Lake field, Tyler County, upper Gulf Coast section of Texas. The plant addition is being built by Frick-Reid Supply Co.

Frick-Reid Awarded Maljamar Repressuring Job

The repressuring plant for the Maljamar field in Eddy County, New Mexico, will be constructed by Frick-Reid Supply Corp., Tulsa. The company entered a successful bid of $292,000 for the plant.



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THAT PROVE *NO TWO IDENTICAL*

THERE is no trick involved in the construction of satisfactory cooling towers. Each cooling job, however, has individual characteristics requiring complete designing, engineering and erection service specific to the problems involved. The blue prints and job files of a half dozen representative cooling tower projects prove our contention.

To the uninitiated the construction of a cooling tower looks simple enough. To the experienced plant engineer, however, the cooling tower is a vital link in his chain of manufacturing operations. It is one link which must not weaken or break.

Disregarding blind tradition and attacking the problem of heat transfer on the foundation of the known constants of water and air temperatures, latent heat, wind velocities and spatial relationships, Fluor engineers have developed a line of cooling towers embracing sustained operating efficiencies not heretofore available. That is why more and more users of cooling towers are insisting on the quality of product, conscientious service and customer satisfaction that has won for Fluor during the past fifty years an enviable position in the industry.

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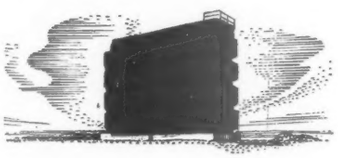
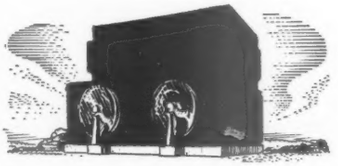
Fluor's policy and product installation has always been one of *undivided responsibility* for every detail.

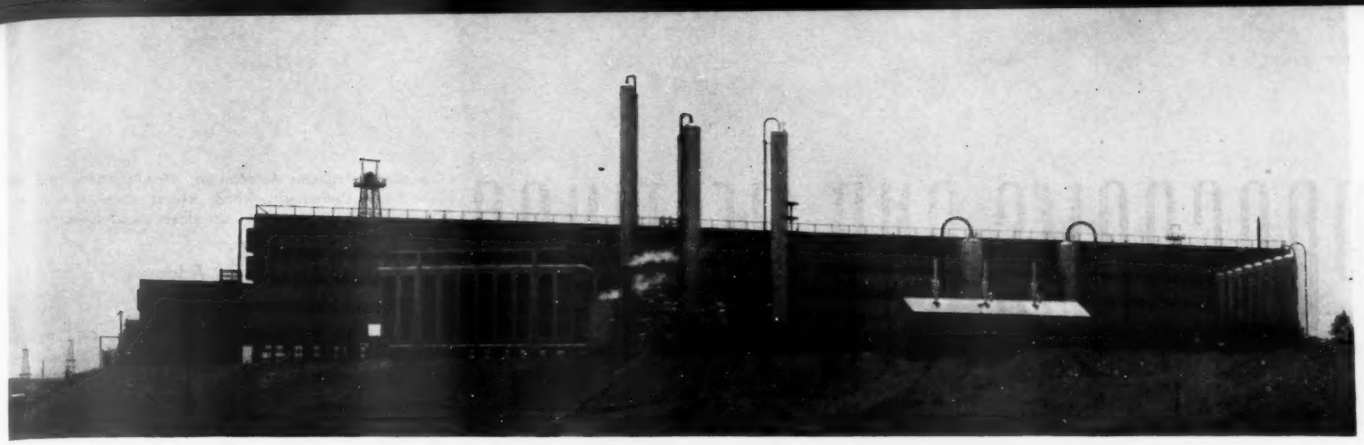


Fluor Aerator Type Cooling Towers are universally accepted as the standard atmospheric type.



Fluor mechanical draft towers are available in two types: Forced Draft and Induced Draft. They afford definite efficiencies and economies where this type of tower construction is indicated.

FLUOR COOLING TOWERS



Superior Oil Co.'s absorption-type plant in the Kettleman Hills field of California which was completely modernized during the past year

Low Prices of Natural Gasoline Cause Drop in Plant Capacity

By D. H. STORMONT

THE low prices quoted on products of natural-gasoline plants throughout most of the past year resulted in the total capacity of plants operating in the United States showing a slight decrease. Since 1935 the combined capacities have shown a constant gain except in 1939, due to new construction more than offsetting the abandonments taking place each year. For the past year, though, natural-gasoline prices tended to hover near levels that barely permitted profitable operation. Thus there was no incentive for construction of plants in new fields or enlargement of those already in operation. Moreover, many less economic plants had to be abandoned. More stringent proration of oil and gas in large flush fields also contributed to the plant-capacity decline, but this factor was far out weighed by the effect of the generally low market prices.

The total number of plants likewise declined, from 651 to 609, but this was only a continuation of the past 12 years' trend toward fewer and larger plants. The great majority of those abandoned were of small size, however, so that their effect on the combined capacity of the nation was relatively slight.

The latest survey of The Oil and Gas Journal shows that the total capacity of natural-gasoline plants dropped from 11,354,463 gal. daily to 11,275,985 gal. daily during the past year. These totals exclude the natural gasoline manufactured in gas-recycling plants, whose output during the past 2 years has shown a tremendous growth. Plant facilities and methods employed in the recovery of condensate closely follow those of the natural-gasoline industry, except that pressures employed in gas recycling are much higher. This survey, however, was entirely confined to plants processing gas produced in association with crude oil.

1940 Output Sets New Peak

Preliminary figures of the Bureau of Mines place total natural-gasoline production during 1940 at an average of 6,358,000 gal. daily, the highest in the industry's history. Thus plant capacity was considerably in excess of actual daily output as many plants were forced to operate at levels far below their capacity due to declining gas supplies, either natural or as a result of proration. This excess capacity has always been more or less inherent in the industry, but in the future will probably tend to be less pronounced due to the more conservative practices employed in development of oil fields. That the industry operated at only 55 per cent of its capacity indicates that it is materially overbuilt at this time.

Fig. 1 shows the annual production of natural gasoline and its market value during the period 1924 to 1940, based on data prepared by the Bureau of Mines. During the later part of the twenties it is shown that both production and market value steadily increased and then by 1932 had declined to almost one-half the peak levels. Between 1932 and the first of 1940 annual output regained all its lost ground, but the market value had climbed to only two-thirds of its former peak.

Last year, it is shown, production of natural gasoline totaled 2,320,458,000 gal., or 151,000,000 gal. more than in 1939. Despite this record output, though, the manufacturer received the lowest returns for his marketed production during any year since 1935—when annual production was more than 668,400,000 gal. less than in 1940. The average price per gallon of natural gasoline produced last year was 3 cents at the plant, which was 1.5 cents less than in the previous year. Thus despite a 7 per cent gain in production, the market value of products declined about 28.7 per cent. These data, of course, do not represent the actual income of the industry during the 17-year period; they are compiled merely to illustrate the trend in market value of products.

The survey of natural-gasoline plants in the United States, giving the field location and type of plant, and listing the natural-gasoline capacities, begins on Page 92. Personnel of the natural-gasoline companies starts on Page 76.

Growth in Plant Capacity

In Fig. 2 is traced the growth in combined plant capacity and average plant capacity, and the decline in total number of plants during the period of 1924 to 1941. This chart reveals that whereas

(Continued on Page 75)

DISTRIBUTION OF PLANT CAPACITIES AMONG STATES

	No. of plants		Daily natural-gasoline capacity (gal.)	
	1941	1940	1941	1940
Arkansas	9	8	120,000	147,800
California	96	96	3,033,500	3,073,300
Colorado	2	2	7,000	7,000
Illinois	26	30	151,790	69,393
Kansas	14	15	378,500	314,900
Kentucky	3	3	51,500	36,400
Louisiana	28	27	609,000	518,700
Michigan	3	3	25,090	30,000
Montana	1	1	7,000	15,000
New Mexico	7	7	352,000	340,000
Ohio	11	11	48,640	47,600
Oklahoma	105	114	1,912,050	1,953,450
Pennsylvania	73	89	143,245	155,943
Texas	144	151	3,949,800	4,150,550
West Virginia	80	87	348,860	365,127
Wyoming	7	7	138,100	129,300
TOTAL	609	651	11,275,985	11,354,463

Note—April 1, 1941, includes 30 plants with 229,150 gal. daily capacity listed as shut down. May 1, 1940, includes 27 plants with 213,850 gal. daily capacity listed as shut down.

PROGRAMS AND MEETINGS

West Texas Geological Field Trip Starts May 10

The annual spring field trip of the West Texas Geological Society, May 10-11, will start at Fort Worth, Tex. Geologists will be guests of the Fort Worth Geological Society Friday night, May 9, presided over by Robert H. Dott, director of the Oklahoma Geological Survey.

Speakers at Fort Worth will be Karl Mygdal, Pure Oil Co., on "Search for Oil in the Fort Worth Basin"; C. W. Tomlinson, consulting geologist of Ardmore, Okla., on "Pennsylvanian Provinces of Oklahoma and the Relationship to Each Other"; M. G. Cheney, Anzac Oil Co., Coleman, Tex., on "Main Subdivisions of the Lower Pennsylvanian," and H. H. Bradfield, Texas Co., Fort Worth, on "Classification of Pennsylvanian of North Central Texas Based on Fossils and Usage."

Members of the field party will move west from Fort Worth the morning of May 10 and stop overnight at Abilene, Tex., where the geological society of that city has arranged a program. Speakers at Abilene and their subjects are:

W. Armstrong Price, consulting geologist, Corpus Christi, Tex., "Origin of the Calcareous Deposits of the High Plains."

Ed W. Owen, L. H. Wentz Co., San Antonio, Tex., the newly elected president of the American Association of Petroleum Geologists, "Physiographic Facts and Fancies."

The Abilene meeting will be presided over by Dr. E. H. Sellards, director of the Bureau of Economic Geology at the University of Texas, Austin, Tex.

Leaders of the field trip are Mr. Cheney, V. C. Perini, Jr., Abilene, Merry Brothers & Perini; Morgan E. Roberts, Fort Worth, Pure Oil Co., and Dr. Gayle Scott, Fort Worth, professor of geology, Texas Christian University.

The party will disband at Midland after studies of outcrops along the route. Sections to be covered are the Pennsylvanian, Permian, Triassic, Cretaceous and Tertiary.

Liquefied Gas Group Will Hold Meeting June 9-10

Natural-gasoline and refinery men from plants, chemical laboratories, and engineering departments, have been issued an invitation to attend the second annual convention, Pacific Coast section, Liquefied Petroleum Gas Association to be held in the Fairmont Hotel, San Francisco, Calif., June 9-10. The invitation was extended by Charles E. McCartney, chairman.

The program for the convention has been planned to interest all of the groups from the petroleum and natural-gasoline branches of the industry with a group of papers to be presented by authorities on various subjects.

Plant men and safety engineers will be particularly interested in the butane-propane safety and fire demonstration.

Max B. Anfenger and O. W. Johnson, safety engineers, Standard Oil Co. of California, will present a paper on "Physical Properties of L.-P. Gases."

Canadian Associations Meet in May

The thirty-fourth annual convention of the Canadian Gas Association will be held in Hamilton, Ont., Canada, May 20-21. The program will be followed immediately by the eighteenth annual convention of the Natural Gas and Petroleum Association. Headquarters will be the Royal Connaught Hotel. Guest speaker will be T. J. Strickler, president, American Gas Association.

Oil-State Governors to Address Midyear A.P.I. Meet at Tulsa

Gov. Leon C. Phillips, of Oklahoma, and Gov. Payne Ratner, of Kansas, will be guests of honor and speakers at the eleventh midyear meeting of the American Petroleum Institute, scheduled for May 19-22 in the Mayo Hotel, Tulsa. The oil-state governors will address the luncheon and general session to be held Wednesday noon, May 21.

Sessions of the Institute's Division of Production and Refining, for discussion of technological phases of the petroleum industry's undertakings, and meetings of more than 75 committees, will occupy the time and attention of hundreds of oil men expected at Tulsa for the gathering. This is the first midyear meeting to be held in Tulsa since 1936, and the fifth occasion that the meeting has been held in the Oklahoma city.

The midyear meeting golf tournament, with competition for the "J. Edgar Pew trophy," will be held at the Southern Hills Country Club. Participants will play each day, Monday through Thursday. The tournament will close with the golf banquet, Thursday night, May 22, in the Roof Garden of the Tulsa Club. The Pew trophy, which may be held by the winner for 1 year, was won in 1940 at Fort Worth, Tex., by the late Edwin B. Hopkins, of American Maracaibo Co., Dallas, Tex., with a net score of 66.

Regulate Gasoline Grades

TORONTO, Ont.—The federal oil controller, G. R. Cottrelle, is working on plans to restrict the sale of gasoline throughout Canada to two grades. The plan contemplates a premium grade, with octane rating between 75 and 78 and a standard grade between 64 and 70. The premium grade will contain ethyl fluid. While the oil controller has power to enforce such a grading, it is anticipated the new grading will be established by cooperative action of the various provincial governments. At present three or even four grades are sold in some areas.

CALENDAR OF EVENTS

April

NATURAL GASOLINE ASSOCIATION OF AMERICA, annual convention, Baker Hotel, Dallas, Tex., April 23-25.

PETROLEUM INDUSTRY ELECTRICAL ASSOCIATION, Mayo Hotel, Tulsa, April 23-25.

NATIONAL PETROLEUM ASSOCIATION, semi-annual meeting, Hotel Cleveland, Cleveland, Ohio, April 24-25.

GREATER NEW YORK SAFETY COUNCIL, Safety Convention and Exposition, Petroleum Section, Hotel Pennsylvania, New York City, April 25.

PETROLEUM AND NATURAL GAS CONFERENCE, State College, Pa., April 25-26.

LIQUEFIED PETROLEUM GAS ASSOCIATION, INC., Southern section, Roosevelt Hotel, New Orleans, April 28-29.

May

AMERICAN GAS ASSOCIATION, Natural Gas Section, Dallas, Tex., May 5-8.

WEST TEXAS GEOLOGICAL SOCIETY, annual spring field trip, starting at Fort Worth and ending at Midland, May 10-11.

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA, midyear meeting, board of directors, Plaza Hotel, San Antonio, Tex., May 13.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, Chicago, May 19-21.

AMERICAN PETROLEUM INSTITUTE, eleventh midyear meeting, Mayo Hotel, Tulsa, May 19-22.

NATIONAL ASSOCIATION OF PURCHASING AGENTS (Oil Company Buyers' Group), Stevens Hotel, Chicago, May 26-29.

NATIONAL OIL SCOUTS AND LAND MEN'S ASSOCIATION, annual convention, Dallas, Tex., May 29-31.

June

SOCIETY OF AUTOMOTIVE ENGINEERS, summer meeting, Greenbrier Hotel, White Sulphur Springs, W. Va., June 1-6.

ILLINOIS-INDIANA PETROLEUM ASSOCIATION, ninth annual petroleum conference, Robinson, Ill., June 7.

LIQUEFIED PETROLEUM GAS ASSOCIATION, INC., Pacific Coast section, Fairmont Hotel, San Francisco, Calif., June 9-10.

KENTUCKY OIL AND GAS ASSOCIATION, midyear meeting, Lexington, Ky., June 20-21.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, annual meeting of Petroleum Division, Kansas City, Mo., June 16-20.

PENNSYLVANIA GRADE CRUDE OIL ASSOCIATION, annual meeting, Bradford, Pa., June 19-20.

AMERICAN SOCIETY FOR TESTING MATERIALS, forty-fourth annual meeting, Palmer House, Chicago, June 23-27.

September

AMERICAN CHEMICAL SOCIETY, Atlantic City, N. J., September 8-12.

NATIONAL PETROLEUM ASSOCIATION, thirty-ninth annual meeting, Hotel Traymore, Atlantic City, N. J., September 17-19.

SOCIETY OF AUTOMOTIVE ENGINEERS, national tractor meeting, Schroeder Hotel, Milwaukee, Wis., September 25-26.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, East Texas chapter, annual convention, Adolphus Hotel, Dallas, Tex., September 25-27.

NATIONAL LUBRICATING GREASE INSTITUTE, ninth annual meeting, Stevens Hotel, Chicago, September 29-30.

October

TEXAS MID-CONTINENT OIL AND GAS ASSOCIATION, twenty-second annual convention, Beaumont, Tex., October 9-11.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, Dallas, Tex., October 16-18.

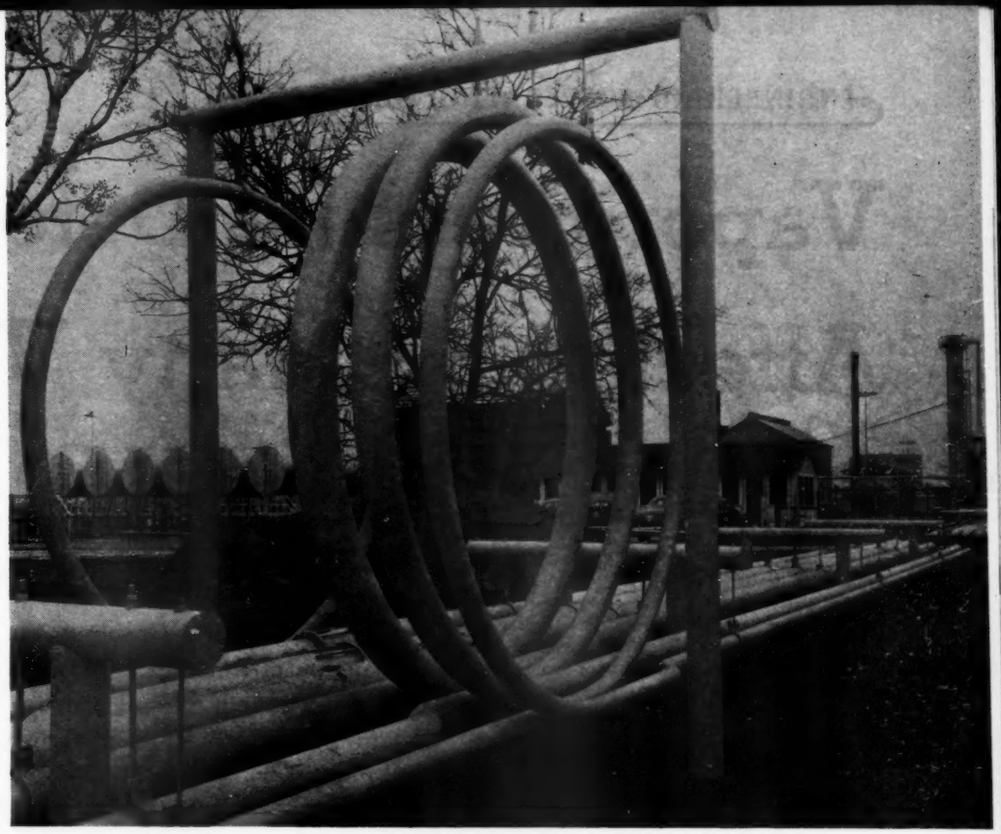
SOCIETY OF AUTOMOTIVE ENGINEERS, national aircraft production meeting, Biltmore Hotel Los Angeles, Calif., October 30-November 1.

CALIFORNIA NATURAL GASOLINE ASSOCIATION, Los Angeles, Calif., October 31.

November

AMERICAN PETROLEUM INSTITUTE, twenty-second annual meeting, San Francisco, Calif., November 3-7

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, Los Angeles, Calif., November 6-7.



In gas recycling operations the high pressures employed require use of loops in the gas lines to care for any expansion and contraction. These expansion loops are usually placed near the plant, often in a vertical position but sometimes laid horizontally on the ground. At this plant in the Hamman field of Matagorda County, Texas Gulf Coast, the operator has consolidated all bends at one point and erected a pipe trestle to support them

ENGINEERING & OPERATION

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APRIL 24, 1941

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The technical committee of the Natural Gasoline Association of America, through the research and routine laboratories of various companies, investigated all work done on vapor pressures since the adoption of the Reid method. Also all other recent data pertaining to the magnitude of errors which can be attributed to the various specifications and procedural steps were assembled.

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The gas-testing committee of the N.G.A.A. has completed the revision of the charcoal adsorption-test code and with the exception of the activation test has been adopted by the committee. Changes in the code and method of testing are outlined here.

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Vapor-Pressure Determinations Affected by Many Variables

By FRANK M. ALLEN
Indian Territory Illuminating Oil Co.

N.G.A.A.—A report of research by the technical committee of the Natural Gasoline Association of America, presented at the twentieth annual convention held April 23-25, 1941, at Dallas, Tex.

At the June 1940 meeting of A.S.T.M. Subcommittee XXII on natural gasoline, it was suggested that all changes in the Reid vapor-pressure method, which had been proposed over the years for improving the reproducibility of the method, should be evaluated. Pursuant to their suggestion, the technical committee of the N.G.A.A., through the research and routine laboratories of the various committees, carefully examined each and every suggestion that had been received since the first adoption of the Reid method. The results of these various investigations, together with all other recent data pertaining to the magnitude of errors which can be attributed to the various specifications and procedural steps, have been assembled and constitute the basis of this report.

As a forethought, let us bear in mind that vapor pressures, as determined by the Reid method, are not true vapor pressures of the products tested, but are relative and closely approach the true absolute-vapor pressure. Therefore, it is reproducibility within reasonably narrow limits that is most essential for this test method, making it necessary that the most careful attention be given to those factors that affect reproducibility, and at the same time not to encumber the method with such details that restrict its application to skilled technicians.

In the following discussion the various factors will be dealt with in their order of appearance in Method D323-40T, which, incidentally, is also their approximate order of importance.

Weight and Type of Construction

Varying types and weights of material have been employed in the construction of experimental air and gasoline chambers. Thus, in one series of investigations, the weight of the air chamber was varied from 1.85 lb. to 4.8 lb. and the weight of the gasoline chamber from 1.04 lb. to 2.86 lb., both brass and steel being used. The results obtained with varying weights and construction material did not vary appreciably. From this it can be concluded that the weight and type of construction of the air and gasoline chambers have little, if any, effect on the Reid vapor pressures, if the present procedure is correctly employed. However, as will be noted later, the heat capacity of the air chamber and type of construction may have a noticeable effect in certain variations in the procedure for the determination of the "initial air temperature."

Volumetric Ratio of Chambers

As a result of considerable discussion in the early history of the Reid vapor-pressure method, the internal dimensions of the air and gasoline chambers were specified with narrow limitations so as to obtain an air-chamber to gasoline-chamber volume ratio of 4 to 1. The tolerances were set at 3.8 to 4.2 in order to permit manufacturing limits. Considerable experimental work has been done to show the effect of variations in this ratio, and the result of these investigations has been previously reported and published. While it has been shown, for example, that in the case of 19-lb. unrectified natural gasoline the limit of 3.8 to 4.2 permits a possible difference as great as 0.6 lb., these same limits permit a difference of only 0.1 lb. for stabilized products. Nevertheless, it is recommended that the ratio be maintained as nearly 4 to 1 as possible. Under normal conditions there appears to be no reason why simple mechanical adjustments cannot be made to the existing apparatus so as to secure the optimum ratio of 4 to 1. For example, lead wire may be added to either the air or gasoline chamber to obtain the exact ratio.

It has been suggested that the volume of the bourdon-tube gage connection be specifically limited, but since this volume affects the test results only in so far as it alters the air to gasoline-volume ratio, it has not been considered that the variation of this volume is sufficient to warrant limitation.

It is obvious that test results of vapor pressures can be no more accurate or reproducible than the apparatus used for indicating the results. The requirement that pressure gages be calibrated with a mercury column after each test has greatly restricted the magnitude of errors that at one time could be attributed to the gages, but the pressure gage can still be the source of appreciable error. If at a constant pressure the gage can be made to indicate a pressure over a range of 0.2 to 0.4 lb., depending on which side you do your "tapping," then that gage is a potential source of error of the same magnitude. Therefore, pressure gages must be reproducible in their pressure indications.

The suggestion that the mercury column used for calibrating the test gage be compensated for temperature has not been considered necessary, since the potential error that can be attributed to this variable is ordinarily small, amounting approximately to 0.1 per cent for each 10° departure from standard temperature.

Bath Temperature and Thermometers

The A.S.T.M. has considered the present bath-temperature specification of 100 0.2° is sufficient, since tests have indicated that the vapor pressure of gasoline changes only about 2-3 per cent per degree at 100° F. The accuracy and types of the thermometers are sufficiently detailed in the present procedure, and, if the procedure is adhered to, will not constitute a source of error.

Improved Sample Handling

Recently approved modifications in the Reid vapor-pressure method are to insure better handling of the samples, placing the responsibility

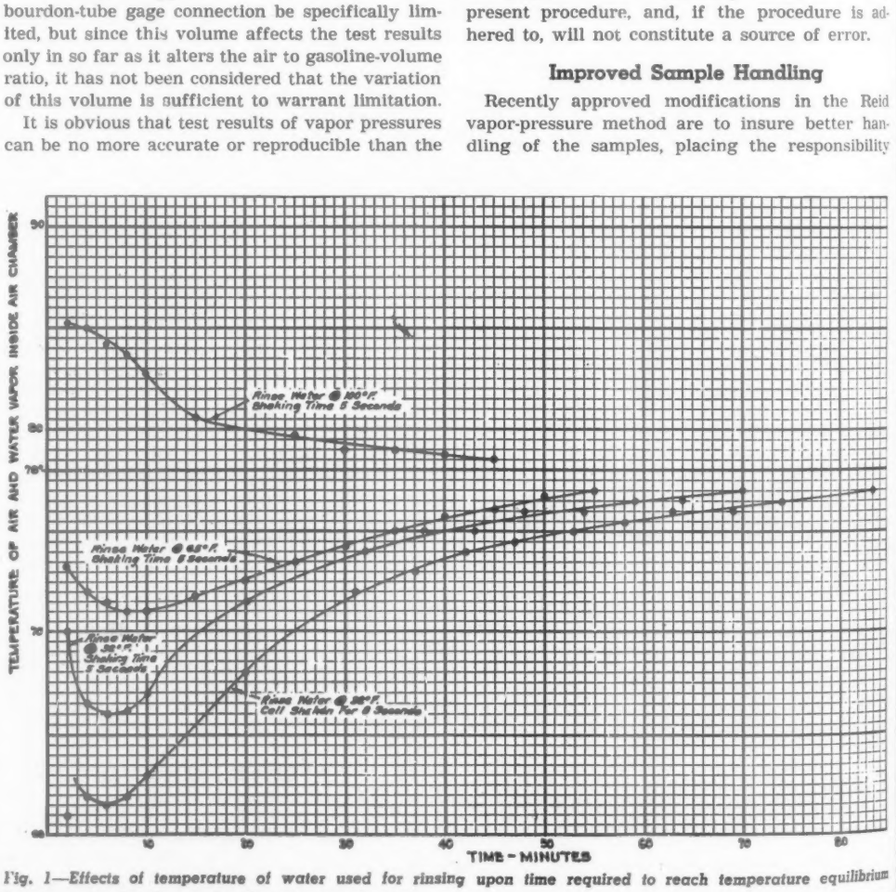


Fig. 1—Effects of temperature of water used for rinsing upon time required to reach temperature equilibrium between air chamber and adjacent atmosphere

for the samples being in good order upon the person conducting the test as well as upon the person obtaining the sample. Obviously, with the Reid vapor pressure, as with any other test, the results can be no more reliable than the care that was exercised in the procurement of a representative sample. Any sample in a container that shows evidence of having leaked should be discarded, since, obviously, it lost some of the more volatile components, and no longer constitutes a representative sample of the product to be tested.

Proper Aeration

The modifications in the Reid method approved last month by Subcommittee XXII place the responsibility for the proper outage (20 to 30 per cent) upon the person conducting the test in order to insure proper aeration of samples. It has been recognized since the first adoption of the Reid method that the quantity of air in solution with the gasoline would affect the final vapor-pressure measurement, the magnitude of the effect being inversely proportional to the vapor pressure. Samples with a vapor pressure of slightly above 26 lb. indicate the same vapor pressure regardless of whether they are completely devoid of air or completely saturated with air. While it is realized that the present procedure of aerating the samples does not necessarily result in a completely air-saturated sample, such a procedure does give satisfactory results, and it has been considered unwise to encumber the procedure with more time-consuming operations which will not justify themselves. It must be assumed that proper allowance will be made by interested parties for variations in air saturation which may have resulted from movement of the products between different sampling points, or samples of the same product taken at different times.

Purging the Apparatus

The A.S.T.M. procedure calls for directing a small stream of air into the bourdon tube in order to expel any gasoline which may be lodged there. It is desirable to emphasize the importance of complying with this requirement. Any gasoline remaining in the gage tube, even though it be but one drop, will vaporize with the subsequent displacement of air from the air chamber; the resultant error will vary with the degree of air displacement, and may lower the indicated vapor pressure as much as 1 lb. Closely associated is the necessity of complete removal of all gasoline vapors from previous tests from the air chamber, as is adequately provided for in the procedure.

The present procedure provides that the temperature of the water used for rinsing the air chamber prior to attaching the pressure gage be optional. Recently, the A.S.T.M. Subcommittee XXII modified this procedure, deleting the words "temperature optional" and substituting "but the determination of the correct 'initial air temperature' will be facilitated if the temperature of the water used for rinsing is within a few degrees of the room temperature adjacent to the air chamber at the time the 'initial air temperature' is determined."

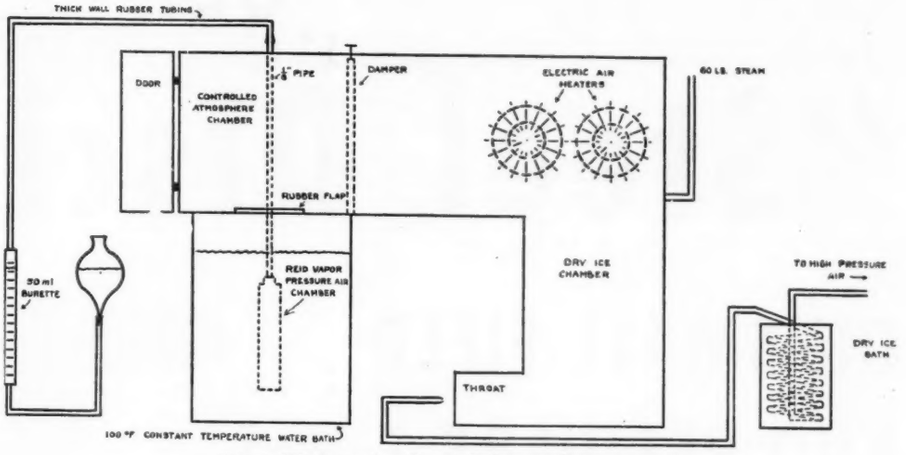


Fig. 2—Wind tunnel and controlled atmosphere apparatus

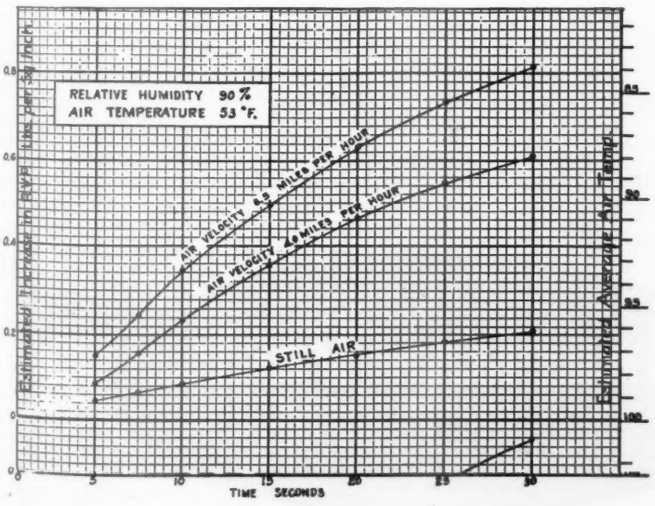
Recent investigations have been made to determine the length of time necessary after rinsing the air chambers at different temperatures for the air thermometer reading to come to within 2° of the adjacent air temperature. The data, shown graphically in Fig. 1, indicate that when the rinsing is done at a temperature differing widely from that of the room, the air thermometer reading changes rapidly during the first few minutes and may require from 36 to 90 minutes to return to room temperature. This does not mean that as great a length of time is necessary for the thermometer to attain thermal equilibrium with the air in the air chamber, but it does illustrate the advantage of having the temperature of the rinse water near the room temperature.

Saturation With Water Vapor

This section was revised by Subcommittee XXII in Washington, March 11, 1941, by the addition of the following sentence: "The thermometer shall be supported and held in position midway between the walls of the air chamber by means of a loosely fitting (not air tight) stopper inserted in the opening of the air chamber. Before inserting, the temperature of the thermometer should be within a few degrees of the temperature of the atmosphere adjacent to the air chamber at the time of determining the 'initial air temperature'." By the insertion of a loosely fitting stopper into the air chamber, not only is the thermometer held midway between the walls of the air chamber but also the air within the air chamber is permitted to become fully saturated by the water adhering to the walls and a saturated condition should be obtained in a shorter period of time than possible without the stopper. Recent tests conducted showed that higher Reid vapor pressure by about 0.1 lb. could be obtained under conditions of high air circulation if a stopper was not used in the air chamber when determining the "initial air temperature."

Initial Air Temperature

For a considerable time the effect of variation in the "initial air temperature" on the final vapor pressure determination has been a controversial matter. Data have been presented which have shown that varying results may be obtained by varying the "initial air temperature," and indications were obtained that the lower "initial air temperature" the lower the corresponding Reid vapor pressure. While the correction factor takes care of the expansion of the air and water vapor from the "initial air temperature" to 100° F., it is fully realized that the increased solubility of the air in the gasoline due to the increased pressure


RELATIVE HUMIDITY 90 %
AIR TEMPERATURE 53 °F.
AIR VELOCITY 8.5 MILES PER HOUR
AIR VELOCITY 4.0 MILES PER HOUR
STILL AIR
Estimated Increase in R.V.P. Lbs. per Sq. Inch
Estimated Average Air Temp.
TIME SECONDS

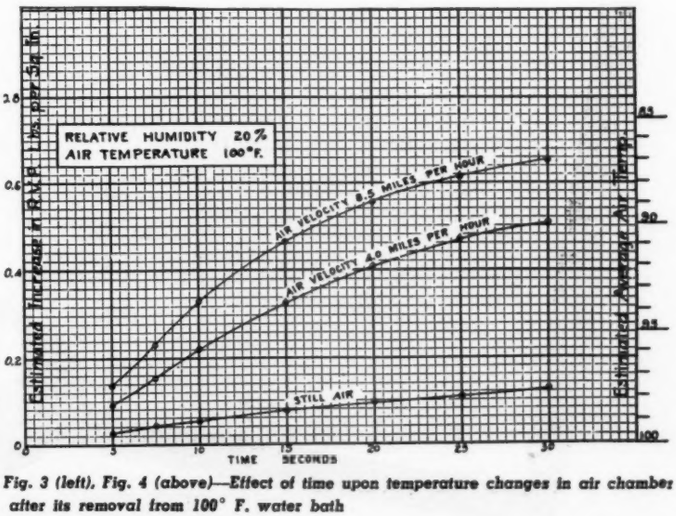

RELATIVE HUMIDITY 20 %
AIR TEMPERATURE 100°F.
AIR VELOCITY 8.5 MILES PER HOUR
AIR VELOCITY 4.0 MILES PER HOUR
STILL AIR
Estimated Increase in R.V.P. Lbs. per Sq. In.
Estimated Average Air Temp.
TIME SECONDS

Fig. 3 (left), Fig. 4 (above)—Effect of time upon temperature changes in air chamber after its removal from 100° F. water bath

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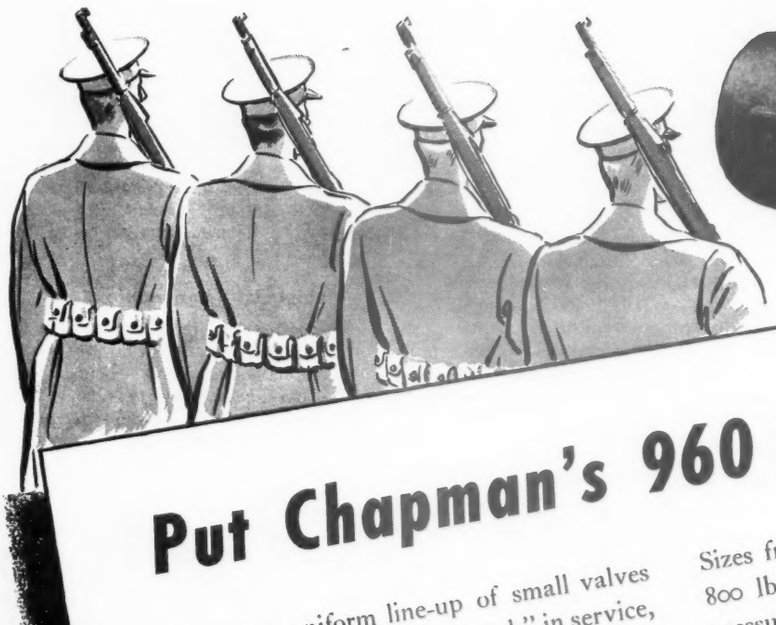

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is not included. This slight discrepancy was evaluated theoretically and experimentally and has been considered generally too small to be of commercial significance, the maximum effect being about 0.1 lb. with the probable error considerably less. This is particularly true inasmuch as present-day vapor-pressure determinations are almost invariably made in the laboratory where the "initial-air temperature" is not likely to vary over the extreme range that it did when many vapor pressures were run on the tops of tank cars

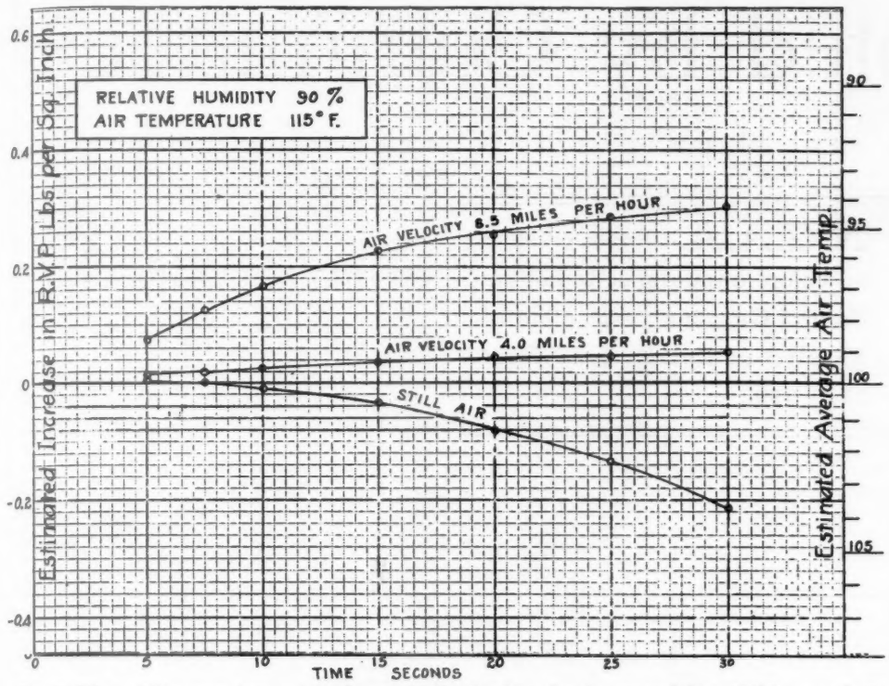

RELATIVE HUMIDITY 90 %
AIR TEMPERATURE 115° F.
AIR VELOCITY 8.5 MILES PER HOUR
AIR VELOCITY 4.0 MILES PER HOUR
STILL AIR
Estimated Increase in R.V.P. Lbs per Sq. Inch
Estimated Average Air Temp.
TIME SECONDS

Fig. 5—Effect of time upon temperature changes in air chamber after its removal from 100°F. water bath

In an effort to circumvent the necessity of the correction factor, as well as to overcome the possible effect caused by increased air solubility due to increased pressure, a procedure for securing the "initial air temperature" at 100° F. in the air chamber prior to connecting it to the gasoline chamber has been advocated at different times over the years by different technicians and organizations, and is today practiced to some extent. Early suggestions of this procedure were eagerly received by many laboratories; consequently, a great number of tests have been conducted to compare the vapor-pressure results as determined by this procedure with those obtained by using correction factors. One large technical group contends that more consistent results are obtained with the 100° F. air-chamber method, whereas almost invariably the results of comparative tests in the Mid-Continent area have been that the 100° F. air-chamber procedure not only yields more erratic results, but the final vapor pressures have been higher consistently by 0.2 to 0.4 lb. than those obtained using correction factors. It is particularly unreasonable to expect higher results. The usual practice is to place the air chamber with gage attached in the 100° F. water bath for a period of time long enough to insure that the air in the air chamber has reached the bath temperature. But in completing the assembly of the apparatus, the air chamber must be removed from the water bath and attached to the gasoline chamber, during which time the air chamber is cooling, and, consequently, drawing in an additional volume of air for which no correction factor is to be applied, and which will result in a higher vapor pressure. The resulting error will, of course, depend upon the volume of air that is taken into the air chamber in addition to the volume contained at 100° F. . . .

As is illustrated in Fig. 2, a standard air chamber, weighing 2.14 lb., was plugged at the gasoline chamber end and had a ⅛-in. pipe attached to the gage end. The opening in this pipe was connected by means of a heavy walled rubber tube to the top of a 50-ml. burette. Water could be run into the bottom of the burette by means of a levelling bulb. A controlled-atmosphere chamber, where varying temperatures, humidities and air velocities were obtained, was placed over a 100° F. constant-temperature water bath in which position the air chamber could be removed from the water bath and placed in the controlled-atmospheric chamber very rapidly. As the temperature changed in the air chamber, water was admitted to the burette by the levelling bulb, displacing air and water vapor into the air chamber so as to maintain the pressure in the air chamber at atmospheric pressure at all times. The quantity of air displaced from the burette by water was read for varying time intervals and by the use of this apparatus, the effect of varying temperatures, humidities, and air velocities on the rate of temperature change was determined.

The change in Reid vapor pressure was determined by calculating the change in the partial pressure of the air in the air chamber. If, for example, it is found that in the time required to connect the chambers 11.5 ml. of air has been drawn from the burette into the air chamber which, at 100° F. contained 540 ml. at the atmospheric pressure of 14.42 lb. per sq. in., when the air chamber is again adjusted to 100° F., the original 540 ml. plus the 11.5 ml. of air drawn in will exert a partial pressure of 14.728 lb., an increase of 0.308. This increase in the partial pressure of the air will result in a 0.308-lb. higher Reid vapor pressure. Knowing the error produced for any set of test conditions, the corresponding average temperature of the air and water vapor in the air chamber may be estimated by using the temperature corrections given in Table 1 of the A.T.S.M. Reid vapor-pressure procedure. In this example the average temperature of the air and water vapor would be approximately 94° F.

Using a relatively light-weight air chamber (2.14 lb.) the temperature in the air chamber began to change in about 1 second's time after being removed from the 100° F. bath. The rate of cooling was dependent upon air temperature, humidity and velocity of the air over the air chamber. It must be remembered that these tests were conducted with an air chamber on which the bottom opening was closed, and the temperature changes are only those effected by external cooling of the air chamber. When the air chamber is placed in the 100° F. water bath and the bottom opening is not closed, as is the usual practice when this procedure is applied, water enters the bottom opening, and the air in the air chamber soon reached 100° F., but under approximately ⅛ lb. per sq. in. above atmospheric pressure. When the air chamber is quickly removed from the water bath, there is a ⅛-lb. per sq. in. reduction in pressure, and a resultant internal cooling of the air, which is in addition to the temperature changes measured in these experiments.

Operators running Reid vapor pressures by this procedure, and using this particular type bomb, require on the average between 8 and 10 seconds to remove the air chamber from the 100° F. bath

(Continued on Page 56)

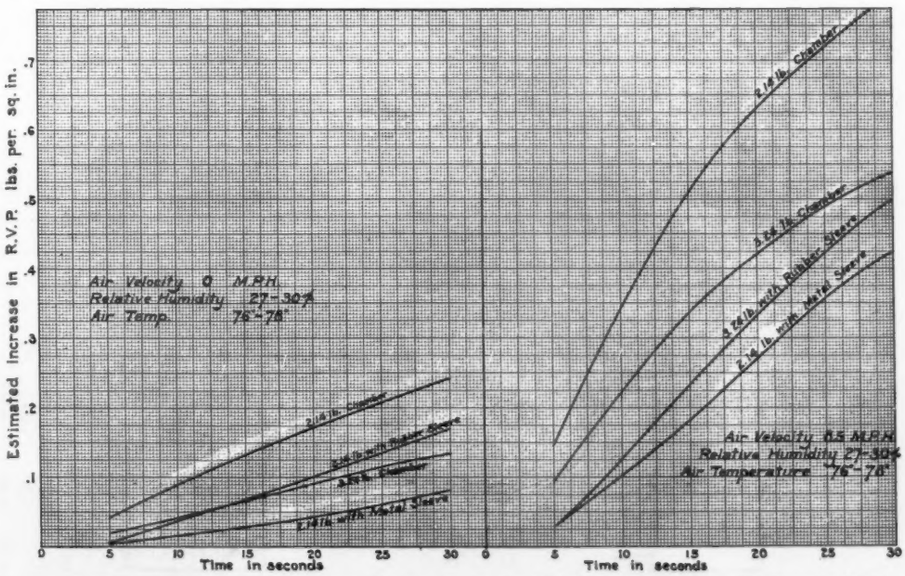


Fig. 6—Effect of time upon temperature changes in air chamber after removal from 100° F. water bath

Revised Charcoal Adsorption Test Adopted by Committee

By H. L. ODER
Cities Service Oil Co.*

N.G.A.A.—Paper presented before annual meeting of the Natural Gasoline Association of America at Dallas, Tex., April 23-25, 1941.

THE revision of the charcoal adsorption-test code, which was in a somewhat embryonic state when the committee report was made last year, has, with the exception of the activation test, been completed and adopted by the committee and submitted to the board of directors for consideration. The code has been divided into the following sections:

Sec. 1. Absorption apparatus and materials, which also refers to Appendix 1, charcoal-activation test; and to Appendix 2, charcoal moisture-content test.

Sec. 2. Adsorption procedure.

Sec. 3. Distillation apparatus and materials.

Sec. 4. Distillation procedure.

The chief changes from apparatus and procedure in the old code that have been included in the new code are as follows:

The present code specifies "Dry, Orifice, or Wet Meter" for measurement of the volume of gas sample. Orifice meters of the size required for charcoal-testing flow rates, especially on gases having a high g.p.m. (gallons per 1,000 cu. ft.) value, are, perhaps, too erratic to be practical. Also, the gravity of the flowing gas is required to compute the volume. Wet meters have a tendency to change the composition of the gas to be tested unless they are used on the outlet side of the adsorption tube. This would introduce complications since residue gas would be measured and the adsorption shrinkage would have to be calculated. The new code specifies a diaphragm meter with specially treated diaphragms having a capacity not greater than 100 cu. ft. per hour. This is in line with current practice in the Mid-Continent area.

A back-pressure regulator has been placed on the meter outlet so that an absolute flowing pressure equal to the required pressure base can be maintained on the gas in the meter. This removes the necessity of a pressure correction, is in line with current practice in compression testing, and is already being done by some companies. Since the atmospheric pressure at any location varies widely and since the average atmospheric pressure varies with the altitude, a barometer to determine such pressure during a test has been provided.

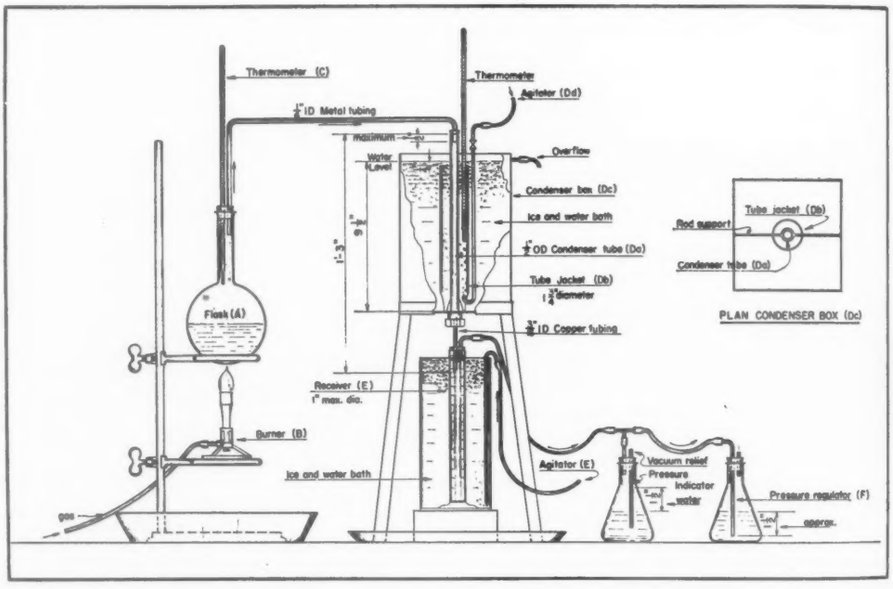
In practice the barometric reading will be determined and subtracted from the proper pressure base and a gage pressure equal to the difference will be maintained on the flowing gas in the meter. To indicate the gage pressure on the gas in the meter a manometer will be required. As a matter of convenience the manometer graduations should be in the same units as the graduations of the barometer. Since most barometers in the gasoline industry are graduated in millimeters of mercury, graduations in millimeters of mercury was specified for the manometer. The manometer must be so connected as to indicate the gage pressure in the inlet side of the meter.

The old code specified 250 cc. of activated charcoal be used for one test. The new code changes this to 130 g. of the activated charcoal. The change is in the direction of uniformity, since weight is a definite quantity, while 250 cc. of such a substance as charcoal is quite indefinite since charcoal can be packed, and will be packed and packed differently by different testers. Tests have shown that other things being uniform, more consistent and uniform results can be obtained if the charcoal charges are of uniform weight.

One hundred and thirty grams was chosen as an average weight of a large number of charges of charcoal which occupied 250 cc. The old code specified a charcoal grain size of 6-14 mesh, the kind of screen not being given. The new code specifies grain size of 8-14 mesh as determined by Tyler screens. Narrowing the screen range will result in more uniform grain size. The old code specified an activation of 40 minutes, no tolerance being given. The new code specifies an activation of 40-45 minutes—a range of 5 minutes being allowed for tolerance.

Appendix 1 will be the new activation test for

*Annual report of the gas-testing committee of which Mr. Oder is chairman.



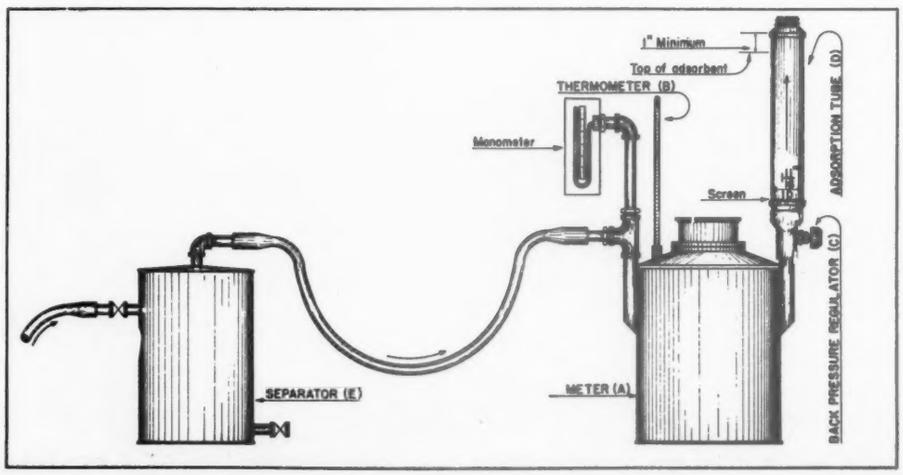


Fig. 1 (left)—Diagram of charcoal adsorption apparatus
Fig. 2 (above)—Diagram of charcoal distillation apparatus

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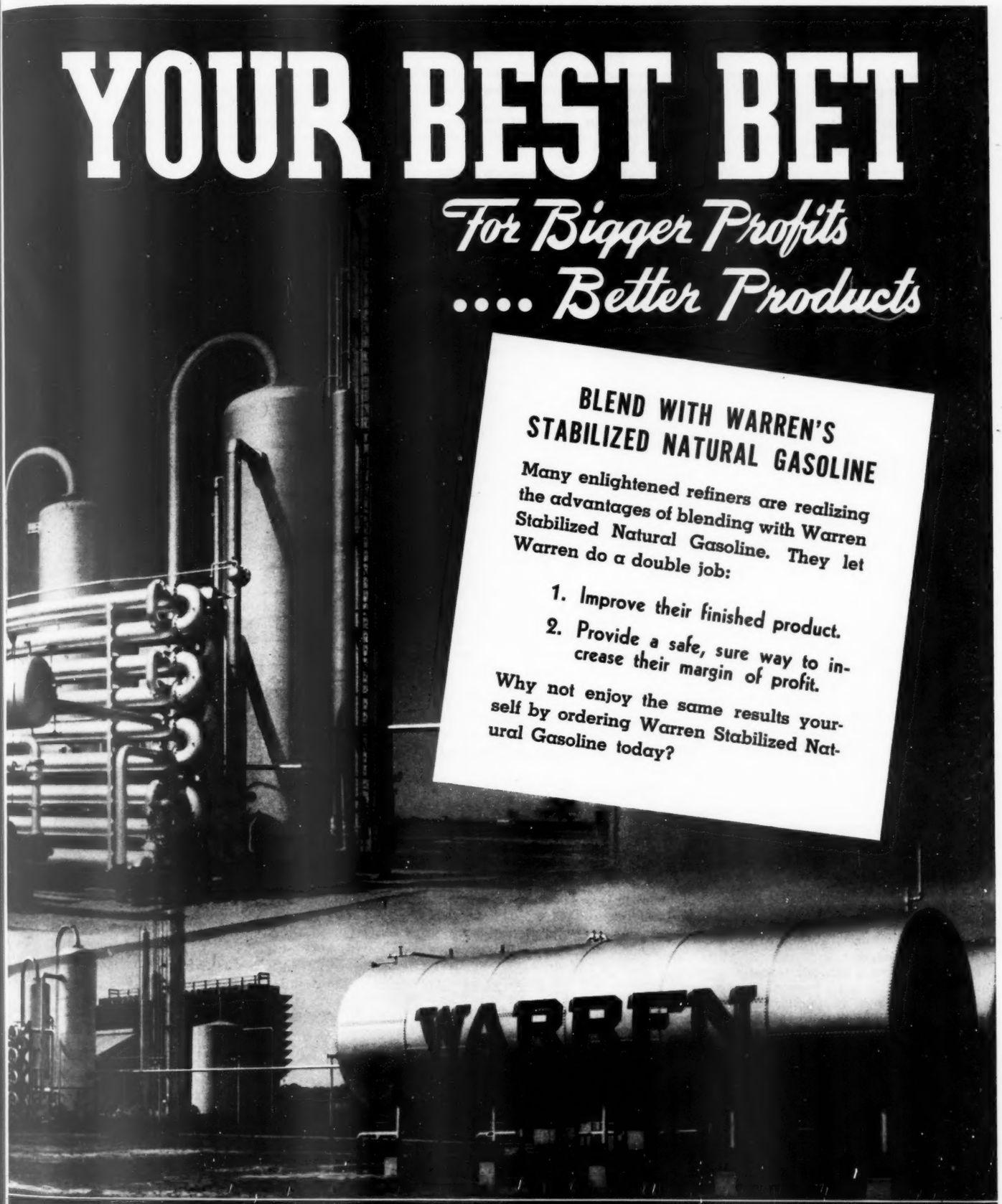

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charcoal. Work on this test is in charge of Mr. Fisher of the Skelly Oil Co., and is not yet completed.

Appendix 2 is the test for moisture content of the charcoal. The old moisture test required a 1-g. sample of the charcoal be heated at 150° C. for 1 hour. Any moisture would be driven out and the amount determined by a reweighing of the sample. The permitted loss of weight was not to exceed 4 per cent, or 4/100 g. Few gasoline laboratories are equipped to make such a test. The new test requires that a unit charge of 130 g. of the charcoal be distilled with 100 ml. of clean kerosene and the recovered water measured. It shall not exceed 5 ml.

The old code specifies a charcoal saturation such that approximately 25 cc. net of condensed gasoline would be recovered from the distillation. Current practice in the industry has tended to increase the saturation and net volume of gasoline recovered. The new code specifies a saturation such that 30 ml. net gasoline with 5 ml. tolerance shall be recovered by the distillation.

Rate of gas flow.—The old code set out a schedule of permitted rates of gas flow through the charcoal, the maximum rate being 20 cu. ft. per hour. The new code raises the maximum rate of gas flow to 40 cu. ft. per hour, but, also, stipulates that no adsorption shall be completed in less than 30 minutes, which thus establishes progressively decreasing maximum rates of flow, as the gallons per minute increases. No minimum rates of flow are specified since no errors are introduced by decreasing the rate of gas flow, except that due to possible meter leakage, and this has been provided for by requiring that the meter be correct at its operating rate of flow.

Fig. 2 illustrates Sections 3 and 4—charcoal distillation apparatus and materials, and distillation procedure. The chief changes that have been made in these sections are as follows:

The old code specified an open-top cylindrical condenser box 6½ in. in diameter by 8½ in. high with conical bottom. This shape condenser box sufficed where only one distillation was required at a time, but was found inconvenient where several simultaneous distillations were necessary. Provided that the shape be convenient and the size ample, an exact specification for shape and size is not necessary. The chief dimension requirement is that the condenser tube be immersed to a sufficient depth. Most charcoal-distillation apparatuses in use today are multicelled, that is, with from two to six distillation units built together. For this purpose a rectangular condenser box is preferable for each unit.

Fig. 2 illustrates a single-unit apparatus with square condenser box, no horizontal dimensions being given. However, a cylindrical box would be permitted by the code, which stipulates that the shape be convenient and the size ample. Since it is highly important that the condenser tube be sufficiently immersed, vertical dimensions of the condenser box, tube and tube jacket are specified.

Glycerin in the distillation flask.—The quantity to be used in the flask was raised from 150 ml. to 200 ml. on the general theory that more glycerin would penetrate the charcoal better and give more consistent results. Also with the lesser amount, the flask at times develops hot spots and will crack. More glycerin will tend to avoid such overheating.

Final temperature of distillation.—The final temperature of distillation has been raised from 350° F. to 400° F. since 350° F. is too near and may be below the end point of the gasoline.

Vacuum relief.—A vacuum relief has been provided for the back-pressure regulator.

Conclusion.—None of the changes that have been introduced are radical and all changes have been made with the thought of modernizing and refining the code. Increase of reproducibility has been sought by decreasing, in so far as is possible, the erratic effects of the personal factor. In general, an increase in the reproducibility of results will tend to increase the content shown by the test.

Compression Testing

Last year's report included the results of some tests which were made to determine the amount of the errors due to accumulation of condensate in the condenser coil of a compression test car. The committee is of the opinion that, while elimination of the error is possible, and obviously equitable, addition of the necessary items would unduly complicate the equipment. The error increases the content and is in the seller's favor. However, at least one manufacturer has included such equipment in its recent test cars.

Last year's report also included the results of tests made to determine the errors in compression-gas test measurement caused by pulsation reaching the test-car meter from the vacuum pump and compressor. No solution to this problem has been found within the last year. The results of the test demonstrated that the amount and direction of the meter errors, whether fast or slow, could not be predicated, being, apparently, dependent on the rate of the pulsations and the individual characteristics of the meter. The committee has about concluded that the results of the pulsations could be sufficiently reduced to make the errors negligible, by placing restrictions and/or volume tanks in the meter inlet and discharge lines. However, it is felt that restrictions are likely to cure one error by introducing another, condensation, and that volume tanks of sufficient size are impractical. The chairman of your committee is of the opinion that the practical possibilities have not yet been exhausted. . . .

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Vapor-Pressure Determinations Affected by Many Variables

(Continued from Page 53)

and complete the tight connection to the gasoline chamber. Fig. 3 shows graphically the calculated increase in Reid vapor pressure, and calculated average initial air temperature plotted against time in seconds for a room temperature of 53° F. and relative humidity 90 per cent. If the two chambers were connected in 10 seconds, there would be an increase in the vapor pressure of 0.08 lb. in still air, 0.23 lb. in air at a velocity of 4 m.p.h. and 0.35 lb. in air at a velocity of 8.5 m.p.h. If it should take as much as 20 seconds for the same temperature and humidity conditions and air velocities, the increase would amount to 0.15, 0.46 and 0.63 lb.

Fig. 4 shows graphically data obtained for a room temperature of 100° F. and relative humidity of 20 per cent. Even under these conditions, in 10 seconds' time the increase amounts to 0.05, 0.22 and 0.33 lb. for still air, 4 m.p.h., and 8.5 m.p.h. air velocities.

Fig. 5 shows results with 115° F. room temperature and relative humidity 90 per cent, which is, at best, unpleasant laboratory conditions. Under these rather extreme conditions, in still air there is actually an increase in the temperature of the air chamber which would produce a decrease in the vapor pressure. If the air velocity is 8.5 m.p.h., however, there will be a drop in temperature in 10 seconds' time sufficient to increase the vapor pressure by 0.17 lb.

In an effort to reduce the temperature change after removal from the 100° F. bath, a tin jacket was placed over an air chamber so that about ¼-in. air space existed between this jacket and the outside of the chamber, and another chamber was insulated by means of a tight-fitting rubber sleeve. Tests on these chambers clearly indicated that the air chamber could be insulated so as to reduce appreciably the rate of temperature change. A comparison of the insulated and uninsulated chambers, and the effect of the weight of the air chamber and type of construction material on the error in vapor pressure for a room temperature of 77° F. and relative humidity of 30 per cent is shown in Fig. 6. A heavy steel chamber, such as is used on the West Coast, indicated much less rapid cooling. This chamber weighed 3.24 lb., and the coupling to the gasoline chamber incorporated the use of a sharply tapered thread with gasket for sealing which enabled the operator to remove the chamber from the 100°F. bath and attach to the gasoline chamber in a little over 3 seconds.

While it is granted that the use of the 100° F. "initial air temperature" is not itself a source of error, the opportunities for erroneous results occur when the Reid vapor pressure test is conducted with the assumption that the "initial air temperature" is 100° F. Actually, as the instant of final closure the air and water vapor in the chamber may be some degrees cooler.

In order to substantiate the above, comparative tests were conducted in which the air chamber contained exactly its volume of air and water vapor at atmospheric pressure and 100° F. and which volume was not subject to possible change before coupling to the gasoline chamber. A ½-in. valve was placed on the bottom of the air chamber and a ⅛-in. valve placed on a tee between the air chamber and the pressure gage. With the upper valve opened and the lower valve closed, the air chamber was placed in the 100° F. bath. After a period of time sufficient for the air in the chamber to reach 100° F. the ⅛-in. valve on the top of the air chamber was closed, trapping within the air chamber exactly its volume of air and water vapor at atmospheric pressure and 100° F. The air chamber was removed from the 100° F. bath and chilled in an ice bath before being attached to the gasoline chamber to show that time and room temperature was no longer a factor. Care was taken to see that the valves did not leak and that the bottom valve was not opened until the two chambers were tightly connected. . . .

As a result of the investigations which have been conducted, it is evident that Reid vapor pressure determinations can be simplified and possibly expedited by utilization of the 100° F. "initial air temperature" with a high degree of reproducibility if ample precautions are taken to insure the temperature of the saturated air in the air chamber being 100 plus or minus 0.5° F. at the instant of final closure of the air chamber. The A.S.T.M. Subcommittee XXII approved, March 11, 1941, a revision of Sec. 17 by adding the following note after Paragraph (f): "Note G. Any other procedure for the determination, with an accuracy of 0.5° F., of the temperature of the air (saturated with water vapor) in the air chamber at the instant of final closure of the air chamber prior to vapor pressure determination . . . is permissible." It might be well to note that the burden of proof as to the temperature "at the instant of final closure" is upon the user. . . .

This report of the technical committee of the N.G.A.A. is more or less preliminary, and a more detailed study will probably be published at a later date. In concluding, I wish to acknowledge that the procurement and compilation of the data presented herein has been largely dependent upon the individual efforts of R. F. Ross, Howard Montgomery, Frank Fisher, E. O. Mattocks, and others.

Operating Ideas

Steel Trough for Returning Mud to Pits

A mud trough made from steel is used by one operator in place of a ditch or the usual board sluiceway. The steel trough comes in sections and can be unbolted for moving from location to location. The screen at the left in the photo is for the removal of shale and sand cuttings from the mud.

Telescoping Rack Extensions Speed Up Operations

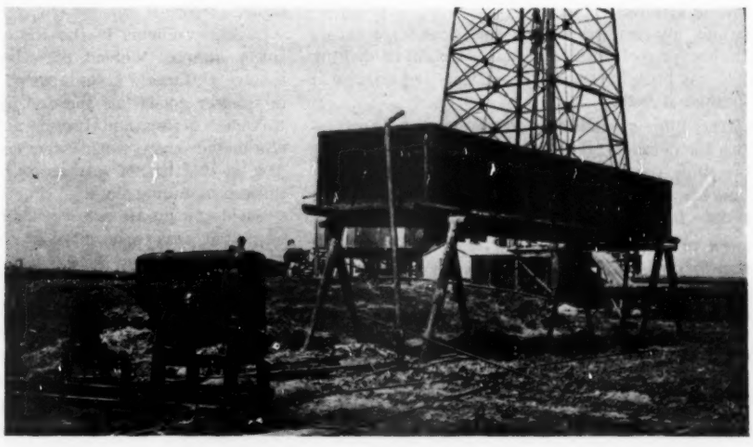
One company increases the useful value of unitized pipe racks by setting up two extra ones, some 15 ft. apart, just across the truck driveway beside the customary racks. These two racks are similar to the others except for the addition of a 12-ft. telescoping pipe extension bolted to the sides of each rack. Made of two sections of drill pipe, the rack can be extended across the driveway and inserted into two larger pipe nipples welded to the edge of the other rack. Spare drill pipe and other tubular goods may be laid out on these extra racks, and then rolled across to the other rack as it is needed. Likewise, when larger sizes of drill pipe are laid down upon reducing the hole size, the joints may be rolled across to the extra racks and out of the way of further operations.

Stove for Drying Rotary Cuttings

Some companies want the cutting samples sacked wet and others want them dried, thus on many mechanical rigs the drying of samples requires a stove of some description. One North Texas operator made a small stove from 8-in. casing and fires it with oil. The oil reservoir is the 5-gal. bucket hanging on the mud-discharge line at the right. A small valve controls the fuel flow into the stove.

Tank for Storing Water at Drilling Rig

A large rectangular tank is used by a contractor operating in Hale County, Texas, for the storage of water used in the drilling mud. The water is obtained from the drilled well under the centrifugal pump and internal-combustion engine at the left. The supports for the tank are adjustable so the tank can be set at any elevation desired to make the water flow by gravity into the pits. Incidentally, light pieces of equipment can be placed in the tank for moving, thereby economizing on number of trips required.



Digests of A. P. I. Papers

Presented before the Eastern district, Division of Production, at its spring meeting in Pittsburgh, Pa., April 17-18, 1941

Improvements in Drilling Lower Costs in Illinois

A. F. LAGER (Siosi Co., Terre Haute, Ind.)

DURING the last 4 years, the State of Illinois has risen from seventh place as an oil-producing state to fourth place. The estimated reserves as of January 1, 1941, are 316,700,000 bbl. As of January 1, 1941, there were 20,836 producing wells in the state. During 1939, 3,845 wells were drilled in Illinois. During 1940, 3,829 new wells were drilled, of which 3,064 produced oil, 16 were gas wells, and 749 were dry holes.

Approximately 9,500,000 ft. of hole have been drilled in Illinois per year during the last 2 years based on an average depth of 2,500 ft.

At present, cable-tool operations are principally used for completion work and reconditioning.

Adaptability of the rotary to meet adverse conditions, coupled with its advantage of speed and comparative cost, has made the use of the rotary drill either advantageous or imperative in the Illinois fields. Discussion in this paper is confined to comment on rotary practice.

Choice of equipment.

The general layout and choice of auxiliary equipment used varies among contractors and companies, but the tendency is to favor light-weight unitized equipment, usually referred to as slim-hole rigs. For medium drilling, cantilever-type masts have come into favor.

Selection of equipment has been largely influenced by moving conditions. The average rig moves from 40 to 50 times a year, which has materially influenced modification of the equipment. The early rigs in the field were moved in six to seven truck loads; modern units are moved in three truck loads.

Drilling problems.

The interbedded shales and limestones made the use of rock bits essential. Selection of drilling bits has been based mostly on localized studies in individual fields.

The Illinois basin has offered many opportunities for detailed bit studies, and it can be pointed out that the result of the combined efforts of operators and manufacturers alike has been to reduce bit costs as much as 50 per cent.

As might be expected, the abrasive nature of the formations causes severe erosive action on body of the drill pipe and tool joints. Ordinarily, the life of drill pipe and tool joints is about the same, and a commonly accepted figure in the Mid-Continent is from 75,000 to 100,000 ft. However, in the Illinois field it was found during the early drilling that it was necessary to replace tool joints at from 15,000 to 20,000 ft., and retire the drill pipe at 40,000 to 50,000 ft. A partial solution of the problem which is most advantageous is offered by increasing the size of the tool joints to the maximum permissible outside diameter. By various means, the average service of tool joints has been raised from 25,000 to 30,000 ft., and of drill pipe to 70,000 ft.; and present indications are that the service of 30,000 to 35,000 ft. for tool joints and 70,000 to 100,000 for drill pipe will be realized.

One of the most important contributions to rotary drilling in Illinois has been the development of field-applied tool joints. Joints have been developed which can be applied on location. Although no actual data are available, it is now believed that better costs can be attained through the use of replaceable joints than rebuilding or hard-facing worn joints.

The mud cost is quite low to the McClosky as only small amounts of colloidal material need be added. All-purpose mud is about 38 vis. and 9½-lb. and, in general, a mud about 35 seconds (full funnel) vis. and 10 lb. per gallon weight with low filtrate characteristics is a safe minimum quality. Below the McClosky, starting with the Warsaw and Osage limestones and continuing through the Devonian to the Trenton formations, circulation may be lost and an effort is made to maintain the drilling mud at an average weight of 9¾ lb. per gallon at a viscosity of 43 seconds. Bentonitic clay, together with admixtures of cellophane fibre, sugar-cane fibre, and other seed hulls, have been successfully used to combat this problem.

The draw works in use with standard derricks are all unitized and again moving requirements affect the design, since each unit must not exceed the 80-ft. highway limits.

Development of hydraulic torque converters for use in driving rotaries is a notable advance made during the last 2 years and is finding favor among operators.

To move, rig up, and set surface pipe within 24 hours is common. There is one instance of a rig which one morning moved 13 miles, rigged up, and the next morning was drilling at nearly 600 ft.

Casing problems in the Illinois fields are relatively simple. Welded pipe has been used extensively. General acceptance of the round thread to tubular goods has speeded up the handling of threaded casing and tubing and has practically eliminated shop work necessary to recondition pipe at the time of salvage. It has also permitted the use of tubing for drill pipe in completion and deepening operations, especially in connection with the reverse-circulation method of rotary drilling.

Use of high-water-ratio gel-type cement was brought about in the Devonian drilling during the last year because of its property of displacing mud in the hole to give even distribution.

In the Salem field early use of multiple stage devices and gun perforating for second-stage cementing gave way to, first, conditioning of the lost-circulation horizons with cement-mud mixture immediately before the casing was run; second, pumping second batch of cement through the bradenhead; and third, the use of flaky admixtures in the cement slurry when using only one stage of cementing.

Wide use of bentonitic admixtures, mechanically proportioned, to high-water-ratio cements on casing cement jobs in the whole basin in 1940 was a major change in cementing procedure.

Use of electric logging has materially increased in the Illinois fields. Both rotary coring and cable-tool coring is being used and choice of equipment varies with the operators; however, little change has been made in design and operation of core barrels.

A pressure core barrel is being used experimentally in the area at the present time. The purpose of this type of barrel is to recover a core which is as nearly as possible in its original condition.

Drilling improvements have been worth while. Drilling costs in Illinois at present are from 25 to 40 per cent below the early figures.

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Hydrocarbon-Gas-Leakage Conclusions Presented

SYLVAIN J. PIRSON (Petroleum Geologist, Geophysicist and Engineer, State College, Pa.)

A NEW method of prospecting for oil and gas fields is proposed whereby the rate of leakage of hydrocarbon gases and vapors through the surface of the ground is measured. Results of surveys can be expressed by various units such as in cubic feet of gases per square mile per year, rate of pressure buildup or molecules of gas per unit area.

It is perhaps too early to draw general conclusions concerning the merits and future prospects of the new geodynamic method of prospecting for oil and gas fields, but on theoretical grounds, and on the experience so far gained with the procedure, the following general conclusions, which should also serve as a guide in using the method, may be tentatively drawn:

1. The geodynamic method provides the only direct method of finding commercial oil and gas deposits in place under pressure by the observation of the dynamic phenomenon of hydrocarbon-gas leakage from the reservoir or high-pressure source towards the surface of the earth or low-pressure region. The method is therefore direct and positive inasmuch as it will not discover accumulations of dead oil, depleted pools or drained-out structures, but will indicate only reservoirs under gas pressure giving an active and continuous leakage. At the present writing, the minimum observable leakage is of the order of 1 cu. ft. of gas per square mile per year but this sensitivity could be increased if it were found desirable.

2. The geodynamic method of prospecting does not require the analysis of either soil air or soil samples and therefore must be regarded as a distinctly new prospecting method. The measurements are strictly physical in nature, yet since the method deals with the measurement of gas leakage, which other geochemical methods also claim to attempt to measure, it is temporarily classed among the geochemical methods.

3. The geodynamic method should give no indication of leakage above granitic outcrops, igne-

ous rocks, metamorphic rocks, or strongly disturbed sedimentary rocks where oil and gas are not found. Geologists have pointed out the unlikeliness of these types of formations to be oil-bearing. Of course, if for some unusual reason, such rocks would be oil-bearing, an indication of leakage would be obtained. This claim should be of particular significance to geologists who have always been skeptical of the reported presence of hydrocarbons in such areas.

4. The patterns of gas leakage observed above oil and gas accumulations should not remain permanently nor should they remain constant in intensity when they exist. Contrariwise to the observed facts in soil analysis, patterns of leakage should disappear if the pressure in the reservoir is dissipated. Naturally, a time lag will be observed in order to allow for pressure equilibrium to be reached at every stage of the leakage.

5. No correction for the type of soil in which the geodynamic measurements are made has been found necessary. The measurements of leakage are not affected by grain size, soil specific adsorbability or rententivity, ionic saturation, water content, depth of measurement, etc.

6. The gas leakage from an oil and gas field follows the mathematical theory of potential which has been successfully applied in other geophysical prospecting methods such as electrical, magnetic, and gravimetric processes. Therefore, the results of geodynamic surveys are susceptible of quantitative deductions and depth predetermination of the high-pressure sources becomes a definite possibility regardless of the presence of shallow accumulations of oil and gas.

7. The halo theory of leakage is not verified by the geodynamic process since generally the maximum leakage is observed in the center of the geologic structure. However, in structures such as salt domes, where the accumulation of oil and gas occurs in a ring-like fashion around the salt plug, a halo of leakage will be observed. Similarly, a halo of leakage of heavy hydrocarbon gas should also be observed where there exists gravity segregation of the fluid in the reservoir rock as is the case in multiphase pools. When dealing with single-phase pools, there should not be any halo whatsoever.

8. Determining whether a field will be an oil field, a gas field, or a condensate field before drilling becomes a distinct possibility through the application of geodynamic prospecting.

9. If executed properly, the results of geodynamic measurements should not show any degree of randomness as the measurements are independent of soil characteristics.

10. The interpretation of geodynamic results follows directly from the application of well-known mathematical principles. It is therefore straightforward and is not based on empirical rules established by trial-and-error methods. The work of interpretation does not need to appeal to any working hypothesis or theory which requires revision each time new facts are observed. Any anomaly in the pattern of leakage can always be correlated to various geological features such as shallow pools, faulting, etc.

11. Contrary to some printed statements, the presence of water horizons should not materially affect the leakage of gases as it is seldom that subterranean waters move at sufficiently high speed to distort the leakage pattern. That gases can diffuse through a water horizon is easily explained. There are two possibilities: either the water horizon is completely saturated or it is not. If it is not saturated, there are openings in the horizon through which gas can diffuse. If it is completely saturated, and this is not a very likely possibility, the gases will dissolve in water at the bottom of the layer and will reappear at the top and be liberated by virtue of their partial vapor pressure.

12. The geodynamic measurements are completely independent of the presence of organic matter in the soil. This constitutes an important advantage over soil-analysis methods of prospecting inasmuch as various observers have reported a very high degree of correlation between the quantities of hydrocarbon liberated from the soil by heating and the organic content of the soil.

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Method Described for Dehydrating Gas at Well

R. B. ANDERSON (Columbian Carbon Co., Charleston, W. Va.)

DISCOVERY in the East of deeper gas production with greater rock pressure permitted higher field-line pressures than had heretofore been possible.

Field-line pressure of 500 to 600 lb. caused hydrate formation or "freezes" at temperatures of 52° to 55° F. Ground temperature of 55° F. is attained early in the fall in West Virginia and does not rise above these temperatures until late spring.

Two courses are open to assure continuous operation. Fluids can be injected into the lines at strategic points that will lower the freezing point of the water. The second alternative is to dehydrate the gas at the well.

Design limitation.

A dehydration plant located at isolated wells must be automatic and require no more than casual inspection, must be simple in operation, must obtain needed power from gas pressure and must be inexpensive.

Well-head dehydrator.

A well-head dehydrator was finally adopted to meet operating conditions. It is the conventional diethylene glycol dehydration plant, unique only in various features of its design to meet the limiting factors.

Gas saturated with water vapor enters the contactor through the inlet pipe above the base of the contactor and passes up through three bubble trays where it contacts the diethylene glycol solution that is flowing down through the contactor. This contact is sufficient to absorb all the water the diethylene glycol is capable of absorbing from the gas. The gas passes out of the contactor near the top and through a mist extractor that removes all entrained glycol and returns it to the bottom of the contactor. The gas leaving the mist extractor is dehydrated.

Operating data and results.

A typical unit, illustrated in the paper, is designed to dehydrate 5,000,000 cu. ft. of natural gas per day at 500-lb. pressure.

Contact temperatures of the gas vary in the six units in operation from 42° to 65° F. The dew points vary with the contact temperature from a minimum of 3° F. to a maximum of 15° F.

Six units were installed in the fall of 1940. The first unit was installed and put in operation 2 days after the first pipe-line freeze occurred. Since that time not one freeze has occurred and the pipe-line efficiency during the past winter has been 100 per cent at all times.

Gravity-flow dehydration equipment.

Another type of unit is adaptable to dehydrating gas at the well. The unique feature is that no pump is required and the still is operated at line pressure, the water removed and condensed under pressure and discharged through a trap from the unit.

An orifice is located in the intake gas line to the contactor that maintains a differential of about a pound or less. A small amount of gas is taken from the upstream side of this orifice through a line that passes through heating coils in the hot-oil bath and brought up to a temperature of about 200° to 250° F. This hot gas is, due to its temperature, relatively dry. It is passed through the hot solution in the still and absorbs water from the diethylene glycol, dehydrating it. The sweep or strip-gas in the still passes then to a condenser where it is cooled by the dehydrated gas from the contactor.

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Secondary Recovery Vital In Ohio Fields' Operations

J. E. SCHAEFER (East Ohio Oil Co., Cleveland, Ohio)

SOUTHEASTERN Ohio was the scene of the earliest attempts of oil men to increase the rate of oil production by means of repressuring. I. L. Dunn, who was one of the pioneers in this field, said that his idea originated when operating in the Macksburg pool in 1903, when gas at a pressure of 45 lb. was forced into an oil well producing from the 500-ft. sand. After 10 days the gas pressure was released and the well began to pump much oil, which continued until the gas had worked out again. The process was later patented and was commonly known as the Smith-Dunn process.

After the initial success of the repressuring experiment on the Wood farm in 1911, the use of the process spread rapidly. Lewis stated that by 1917 about 4,000 oil wells were affected by repressuring on over 90 properties.

It is estimated that approximately 80 per cent of the early projects were successful and that records from 32 properties show an average increase of 3½ times the production at the time the process was started. Gas was used as the repressuring medium where it was available, but in most cases the use of air was necessary.

From the standpoint of secondary recovery, the Trenton fields have not yielded successfully to repressuring operations.

Clinton sand.

The Clinton sand produces oil in East Central Ohio at depths ranging from 3,000 to 4,000 ft. The lenticular nature of the Clinton sand seems to lend itself well to repressuring because the movement of the gas is restricted to much smaller areas than in the case of a sheetlike sand. The wider spacing of Clinton sand wells as compared to that of the shallow-sand fields reduces the effect of repressuring to a marked extent.

During the past 15 years several experiments have been tried in the Clinton sand fields of Muskingum, Perry, Wayne, and Holmes counties. The projects were not successful from the economic standpoint.

There are only two projects operating in the Clinton sand at present One was started by the Chartiers Oil Co. near New Straitsville, in Perry County, Ohio, on November 22, 1933. A group of 18 wells owned by the company were located in a part of the New Straitsville pool where most of the wells were abandoned. These wells were completed in 1912 and 1913 and ranged from 3,300 to 3,400 ft. in depth. The Clinton sand was about 30 ft. thick with the pay zone averaging 20 ft. The initial productions of these wells varied from 25 to 250 bbl. and averaged 137 bbl. per day after shot. All the wells were given a thorough cleaning out, and a centrally located well was chosen

as the injection well. Gas was injected by a two-stage gas compressor with a 25-hp. engine furnishing the power. In October 1933, a month before repressuring started, the combined open flow of the eight wells closest to the injection well was 13,000 cu. ft. In April 1936, after 2½ years of repressuring, the combined open flow of these same wells was 69,000 cu. ft. At first gas was injected under a pressure of 100 lb., then gradually increased to 160 lb., at which time the input averaged 64,000 cu. ft. per day. The injection pressure was later reduced and now stands at about 80 lb., at which 52,000 cu. ft. per day is injected. The rate of gas input has remained fairly constant during the 7½ years of operation and has averaged 42,000 cu. ft. per day. The plant is operated 6 days per week. Just prior to repressuring, the total monthly production of the group of 18 wells was 352 bbl. An increase in production was noted almost immediately after gas injection; in fact, the first month showed a gain of 25 per cent. The peak was reached 20 months later, when 763 bbl. were produced. Since then a gradual decline has set in, and in May 1940 the monthly production was 550 bbl.

Another repressuring project of interest in the Clinton sand was started by the Preston Oil Co. on October 12, 1935, in the Union Furnace field of Hocking County. The field produces from a depth of about 3,000 ft., the sand averaging about 27 ft. in thickness. The 23 wells involved in the project had an average initial production of 160 bbl. per day. All the wells were shut in for 3 weeks prior to the injection of gas, and the equalized pressure was found to be 20 lb. Four wells were chosen for injection purposes, spaced in such a manner that each was surrounded by producers. The average distance from the intake wells to the producers is about 1,200 ft. The compressor, started with a discharge pressure of 90 lb. and a daily delivery of 13,000 cu. ft. The pressure was gradually increased to an average of 200 lb., at which the average daily delivery was 75,000 cu. ft. It required 12,000,000 cu. ft. to establish the cycle, and it has been found necessary to add but little gas to keep operations at the desired level. The alternating of intake wells has been the chief means of combating the bypassing of gas. For the 6-month period just prior to the injection of gas the total monthly production of the 23 wells was 373 bbl. Only the edge wells were allowed to produce for 2 months after the injection of gas was started. After a year of repressuring the monthly production stood at 820 bbl., representing an increase of 120 per cent. The peak was reached after 23 months when the monthly production reached 1,006 bbl., a gain of 170 per cent. Five years later, in October 1940, the production stood at 716 bbl.

Shallow sands.

It is, however, in the shallow-sand fields of southeastern Ohio that practically all secondary-recovery operations have been carried on. During the past 30 years many thousands of these wells have been affected by air and gas repressuring. The shallowness of the producing sands, the close spacing of wells and the low injection pressures required were the chief factors responsible for the success in these formations.

At the present time there are about eight repressuring projects operating in Washington, Morgan, and Monroe counties in southeastern Ohio.

The first project in Ohio, which I mentioned previously, in the Chesterhill pool of Morgan County, is still in operation. The producing sand is the Cow Run, found at depths ranging from 123 to 572 ft., and is a brown, coarse, and loosely consolidated sand having a porosity of from 18 to 23 per cent. The pay thickness of the sand ranges from 11 to 60 ft. and averages 25 ft. The accumulation is accounted for by porosity rather than structural conditions. This project embraced about 400 productive acres and 128 oil wells. The first well was completed in 1898 and the others within the next 5 years. After production reached its height in 1901, when 40,500 bbl. were produced, a sharp decline set in. Air was injected in 1911 at average pressures of 80 lb. and within 3 months increases in oil production were generally prevalent over the entire project. At the start of air injection the annual production was 8,500 bbl. This increased sharply during the next 2 years and in 1913 the production was 12,750 bbl. After this a slow gradual decline set in, which continued at approximately double the rate of production of the normal decline curve. The project has been in operation constantly since the beginning, except for a shutdown of several months in 1928 due to drought and in 1918 and 1939 because of freezing. In 1939 operations were discontinued on four of the original 10 farms. At present air is being injected into 21 wells; 35 are producing oil and 50 wells are shut in. The air-injection rate is 250,000 cu. ft. per day at a pressure of 48 lb.

Gas repressuring.

The largest gas-repressuring project in Ohio is in the Sistersville pool, which extends along both sides of the Ohio River in Ohio and West Virginia. The controlling structure is the Sistersville anticline, which has a structural relief of 125 ft. Just prior to gas injection, in 1933, the vacuum maintained over the entire pool was 25 in. Approximately 1,000 wells were completed in this pool since the beginning. There was originally one well to 6.84 producing acres, but because of many abandonments throughout the years, the figure now stands at one well to 17.70 acres. Figures up to the time of repressuring showed that there had been an average production of 13,450 bbl. per well and a recovery of 1,965 bbl. per acre. At present there are 374 producing wells in the field. Five operators cooperated to repressure the pool as a unit. Gas was injected into 19 wells, of which 14 were old producers and 5 were new. The gas is pumped from 19 different plants, which have a total of 1,500 hp. The injection pressures vary widely, from 8 to 10-in. vacuum in the center of the pool to 100-lb. pressure on the northwestern edge. The average daily intake volume per well has varied from 100,000 to 150,000 cu. ft. At present about 3,000,000 cu. ft. of gas is being pumped, of which 1,600,000 cu. ft. is returned to the sand and the balance is used as fuel for gas-pumping and oil-lifting equipment. At the start of gas injection in June 1933, the average daily production of the pool was 124 bbl. per day. This slowly increased and reached a peak of 337 bbl. per day in March 1939, a gain of about 172 per cent. Since that time, a slow decline has set in.

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Wire Lines Important in Deepening to Clinton Sand

R. B. ANDERSON (Columbian Carbon Co., Charleston, W. Va.)

IN Kanawha County, West Virginia, a few wells have been deepened from the Oriskany to the Clinton sand. Many more will, no doubt, be deepened in the near future.

The interval between the Oriskany and the Clinton is approximately 1,500 ft. and the thickness of the Clinton-Medina sand section is about 100 ft. This means that the Clinton wells will be approximately 6,600 ft. deep when completed.

The most important piece of equipment used in deepening to 6,600 ft. is the wire line. It can be the cause of much trouble and expense and, therefore, deserves more consideration in its selection and use than any other item.

A new wire line is usually put on to start deepening. This means the new line must go to work at almost maximum load immediately. Wire-line manufacturers are furnishing lines now with somewhat closer lay, which are said to be broken in at the factory for whatever depth and load are specified by the purchaser.

The relative merits of tapered lines is a subject that neither the operator nor the manufacturer have given the study the subject probably deserves. Tapered lines have not been used in Kanawha County either for the 5,000-ft. Oriskany drilling nor the 6,500-ft. Clinton drilling, but theoretically, at least, they should be seriously considered.

Comparison of costs would indicate that from the standpoint of relative strength at the top of the hole, the tapered line is much the best line for depths in excess of 4,500 ft. and with the exception of the ⅞-in. plow-steel line is the cheapest line that could be purchased.

Casing program used.

The three wells drilled in the last year to the Clinton in Kanawha County have all encountered a hole full of water in the Newburg sand which is approximately 800 ft. below the Oriskany and 300 ft. above the top of the red-shale section.

There are two sands between the Newburg and the top of the red-shale series. No water, oil, or gas has yet been found in either of them but until more wells are drilled they must be considered possible sources of water. For this reason the 5½-in. casing has not been cemented.

Red-shale section.

The most troublesome and dangerous section to drill is the red and green Silurian shales above the Clinton. It would be desirable to set casing through this section, but because of the water in the Newburg, this is impractical with cable tools, but could easily be done with rotary tools.

The red shales sometimes appear to stand up very well without caving, especially if salt water has been saved and used in drilling. It appears that the safest practice for drilling this formation is to drill about 50 ft. and then fill the hole with cement, let it set for 8 or 10 hours and drill it out. The cement should not be permitted to set much longer than 10 hours before it is drilled out, nor much more than 50 ft. run at a time. The temperature of the hole is high at 6,000 ft. and the cement sets very quickly and if it is permitted to set too hard there is real danger of sidetracking the cement. The time required to drill out 50 ft. is such that the last few feet of cement is almost too hard by the time it is reached.

Drilling and fishing jars.

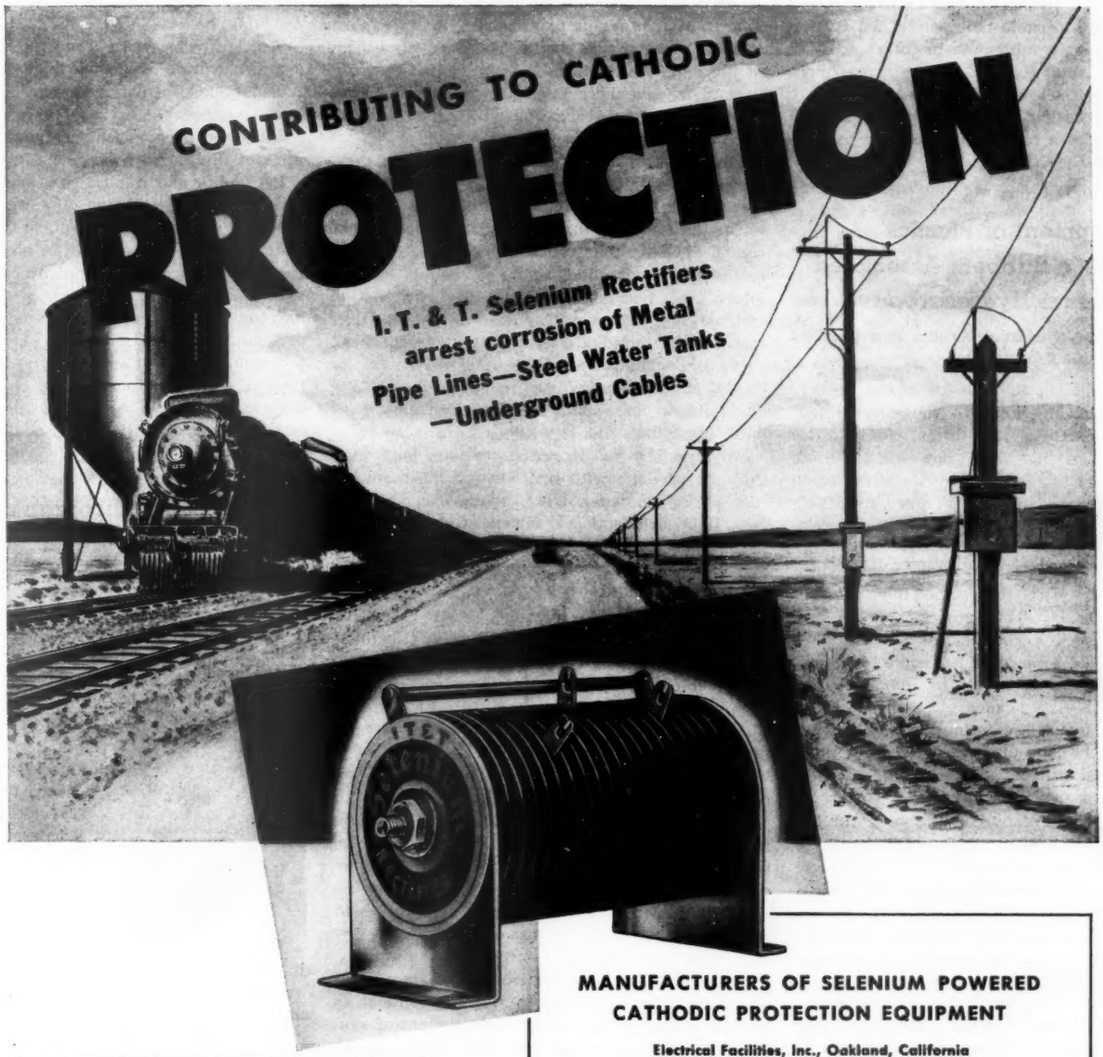
If the 5-in. drilling tools become stuck at a depth of 6,000 ft., it is extremely difficult to tell if the drilling jars are working or if the apparent jar at the top of the hole is just a line jar. With 36-in.-stroke fishing jars it is almost impossible to keep the jars from hitting both ways and still get the type of jar that is required.

Drilling speeds.

The average number of feet drilled per day from the bottom of the Oriskany to the bottom of the Clinton was approximately 14 ft. and the number of days required to drill 1,500 ft. of hole below the Oriskany was 108. These figures have included only actual drilling days when hole was being made; shutdown time or delays due to trouble are not included.

Costs of drilling.

It appears the costs of drilling with cable tools from the Oriskany to the Clinton sand will be in the neighborhood of $16,000, which includes moving, building rig, rigging up, drilling, fuel, water, and one string of 5½-in. O.D. casing. This does not include tubing, shutting-in outfit, shooting and cleaning out.



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Whether a rotary-type drill would do this work more cheaply is a debatable question. A combination rotary and cable-tool outfit might be more economical, but when it is remembered that there is only 400 ft. of section that is ideal for rotary and troublesome to cable tools, and 1,100 ft. that will be somewhat troublesome to rotary tools, it is doubtful if rotary could do the work more cheaply. Rotary tools would, however, be able to land the 5½-in. casing on top of the Clinton sand and this would be a real advantage if large wells are obtained in the Clinton.

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The Development of Plastics And Synthetic Rubbers Associated With Petroleum Hydrocarbons

WILLIAM C. GOGGIN (Plastics Division, Dow Chemical Co., Midland, Mich.)

THE period during the late 'teens can be considered a turning point in the development of plastic materials. Previous to that time plastics were not widely used, and they were limited to a few types, applicable only where their relatively poor physical properties would permit. Since that time the industry has grown by leaps and bounds, and in it petroleum has come to occupy a role of major significance.

Ethylene illustrates the influence which available raw products have upon the method of making finished plastic materials. This comparatively simple product is the basis for a wide variety of plastic materials. Germany, having only limited supplies of metal available, has found it necessary in the cause of self-sufficiency to develop synthetic materials to replace certain of their metal demand. Needing ethylene for these plastic developments and not having petroleum generally available, except for motor fuel and lubrication needs, Germany has developed a method of obtaining acetylene from coal, lime, and water. Carbon from coal and calcium oxide from lime can be chemically joined to form calcium carbide which, when reacted with water, gives acetylene. This latter product can be hydrogenated to ethylene and then used for a variety of base plastics.

In comparison, the United States, which has rather large quantities of petroleum and natural gas available, has found it practical to use these materials as raw products. From crude oil through multistage cracking ethylene is obtained directly. Associated with ethylene are a number of byproducts which are also of interest to the plastics industry.

The importance petroleum plays as a raw material in the manufacture of products can be readily seen. Ethylene derived from petroleum is the product which acts as the king pin around which the processes revolve. For example, in ethyl cellulose, a cellulose is derived from wood or cotton, and subsequently treated with an alkali to form an alkali cellulose. According to literature, under carefully controlled operating conditions alkali cellulose is treated with ethyl chloride to form the degradation product, ethyl cellulose. Ethyl chloride can be made from petroleum through ethylene. The newly formed thermoplastic material can then be purified by washing, treated with certain plasticizers, fillers, and waxes to give a suitable molding or extrusion composition for the manufacture of plastic articles.

During the time that ethyl cellulose was being investigated in the laboratory, another group known as polymerizable compounds were being studied. Polymerization makes use of the fact that the familiar carbon-to-carbon double-bond linkage is not stable under certain conditions. Each monomer molecule is able to jink with others to form long, linear, complex chains. The compound made of the long-chain molecules is known as the polymer. Methyl methacrylate, polystyrene, and vinylidene chloride are examples illustrative of the polymerization process.

The actual formation of the monomers of these materials is rather closely linked to petroleum. Here, with methyl methacrylate, it is through either the familiar ethylene again or its close relative propylene, that the other raw materials of methanol, water, and sodium cyanide can be joined and reacted chemically to form methyl methacrylate monomer. The unsaturated monomer formed is a liquid. Under the influence of heat, light, or chemical catalysts, polymerization or linking of these individual molecules into a long chain takes place, and the liquid changes to a hard, glass-like solid.

Polystyrene is dependent upon petroleum through ethylene with benzene for the manufacture of its monomer. Here, again, the action of heat, light, or chemical catalysts produces a glass-like solid which, when modified by mechanical and chemical treatment, forms an advantageous molding compound.

Vinylidene chloride, introduced in 1939, can be obtained from brine and petroleum, and again is an example of a polymerization product. Polyvinylidene chloride is a crystalline material and as such can be so worked mechanically to align the fibrous crystals. This orientation offers greatly improved mechanical properties.

These materials are representative of the recently developed plastic products associated with petroleum. They are illustrative of the trend which has been taken by the chemical laboratories in the development of new plastics. They do not stand alone as examples of plastics associated with petroleum, for it may be safely said that since 1930 fully 50 per cent of the newly-developed plastic materials are in this group.

The part which available raw materials play in the manufacture of highly useful products is demonstrated in the chemical development of synthetic rubbers which has paralleled that of plastics. The same type of chemistry, primarily that of polymerization, is operative in both cases, the basic difference being that in plastics more rigid materials are usually understood to be meant, while rubber embraces the highly elastic materials.

Chemically, natural rubber is a hydrocarbon of which the basic-building unit is the isoprene molecule. This is represented by the formula $(C_5H_8)x$. It is believed that in rubber there are normally about 2,000 isoprene molecules linked to form the rubber molecule.

The base molecule for a majority of the synthetic rubbers is butadiene. Until this product was available, developments in synthetic rubbers were somewhat limited. Butadiene is the base for the more recently known Buna type rubbers. Here again the availability of raw materials plays an extremely important part in its manufacturing process.

The United States, with its quantities of petroleum and byproducts, has found it advantageous to use the cracking method to obtain crude butadiene from crude oil and natural gas. By subsequent purification a product suitable for polymerization is obtained.

Butadiene alone, like dimethyl butadiene, does not make a satisfactory rubber. It has been found necessary to copolymerize or interlink butadiene with other monomers which sufficiently modify the finished material to make it satisfactory for specified uses.

Two monomers which have been found suitable for this copolymerization are those of styrene and acrylonitrile.

Acrylonitrile, as a copolymerizing agent, is somewhat more expensive than styrene. Acrylonitrile-butadiene copolymers are in general more chemical than the styrene types.

Synthetic plastics and rubbers from petroleum are not limited to a narrow range of properties.

Petroleum and natural gas, as basic raw materials, provide a wealth of possibilties for the manufacture of plastics and rubber-like materials in addition to those practicalities already mentioned. From a chemical standpoint practically all of the synthetic plastic and rubbery products known today could be synthesized from petroleum and natural gas. These raw materials play a large part in the manufacture of such widely diversified materials as methyl cellulose, vinyl chloride and vinyl acetate, propylene chloride resins, the polyethylene plastics, and the poly-isobutylene synthetic rubbers.

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Southwestern Michigan's Exploration Reviewed

KURT H. de COUSSER (Socony-Vacuum Oil Co., Inc., Lansing, Mich.)

IN this report "southwestern Michigan" embraces Ottawa, Kent, Allegan, Barry, Van Buren, Kalamazoo, Berrien, Cass, and St. Joseph counties.

With the exception of one Berea well, in 5-7n-13w, all oil produced in this area comes from the Traverse limestone.

A table, listing fields in the area in chronological order, based on discovery dates, tells the story in this paper. From this chart it is immediately apparent that no discoveries of importance were made during the year, although several one and two-well pools and shows of oil caused considerable interest, all of which are listed on the chart. The most important economic oil development in southwestern Michigan during the year was the extension of pools previously discovered and the drilling of inside or proved locations. These extensions are shown by maps and apply principally to the Walker, Tallmadge, and Overisel pools. From the chart may readily be determined the number of wells drilled in each field, establishing numerically the extent of activity.

With December production estimated in both instances, southwestern Michigan produced 46.6 per cent of the state's entire 1940 production.

Southwestern Michigan proved underground reserves as of January 1, 1941, approximated 8,500,000 bbl., or 25 per cent of the 34,000,000-bbl. reserve of the entire state.

A new peak in wildcat activity was attained in this area during 1940, there having been 562 wildcat wells drilled in all of Michigan, of which 310 wells were drilled in the area under discussion. Distribution of wildcat activity by counties follows:

Kent, 49; Allegan, 140; Barry, 14; Van Buren, 82; Kalamazoo, 7; Berrien, 10; Cass, 7; and St. Joseph, 1.

Out of the wildcat activity of the past years, of which 1940 was most important, there emerges a complicated pattern of folding which will inevitably produce more oil fields at an accelerated rate of discovery.

Combination Rotary and Cable Tool Drilling in Michigan

By HENRY G. HUNT
Lupher Drilling Co., Fairfield, Ill.

A.P.I.

The State of Michigan has made more progressive strides in the use of rotary than any other state in the East with the exception of Illinois. Michigan is more similar to the other eastern states than Illinois because of more lime formations. The use of combination drilling in Michigan came about through trial and error due to the thickness of glacial beds, pencil caves in the central part of the state and difficulties encountered in cable-tool drilling and resultant underreaming.

The Michigan law requires a string of pipe to be set through the Marshall brine sand. As a result of the expense and difficulties in connection with cable-tool drilling, rotary operations started in Michigan in 1928 and increased gradually as pioneering work was done. The combination outfits came into use in 1934. There has not yet been enough experience to determine the difference in pipe saving through the use of rotary, but there is an appreciable saving. There is also a time saving of 37 per cent in favor of rotary.

The accompanying article is a slightly abridged reprint of the paper presented at the annual spring meeting of the eastern district, American Petroleum Institute, Division of Production, Pittsburgh, Pa., April 17-18.

APART from Illinois, where rotary drilling almost completely dominates development activities, the State of Michigan has made progressive strides toward the end of reducing hole-cutting costs and speeding the production of oil into the tanks through the use of rotary tools to a greater degree than any other eastern state.

Michigan is comparable with its eastern sister states to a greater extent than Illinois because of the known presence of tough, flinty-lime beds directly above its principal producing horizons, the Dundee and Monroe lime sections. Without digressing into the geological phases of this picture, it might be advisable to point out that it is possible to drill with open hole in Michigan through these thick lime beds. In Illinois, these same lime formations do not predominate above its principal sources of oil at present, and, because of this fact, it is known as principally rotary country rather than combination country. What is true of Michigan in the adaptability of cable-tool drilling in these hard limes is perhaps even more true in other eastern states, notably Ohio, Pennsylvania and West Virginia.

Origin of Combination Drilling

The origin of combination drilling in Michigan came about through a trial and error operation and was brought about largely because of two factors: namely, the real hazard presented by the glacial drift section found lying on the surface, and the presence of what we shall term a "nuisance hazard" in the form of a pencil-cave shale found a short depth below the drift.

In fighting each condition, two elements always presented themselves. I refer to pipe costs and the factor of lost time due to slow drilling in a wet, cavey hole.

Wells drilled to the Dundee or Monroe formations in Central Michigan vary in depth from 3,300 ft. to upwards of 3,850 ft. There have been tests drilled in both proven areas and on wildcat locations where deeper formations were tested. However, no attempt will be made here to analyze either costs or drilling conditions found in the latter.

At the outset, it was obvious that the glacial-drift section required a string of pipe to shut off water and sand. The drift, being a conglomerate of gravel, sand and water, would not stand up sufficiently to permit even a little hole to be made. It was necessary not only to carry pipe while drilling, but in most instances it was required that the pipe be driven, because of the rapid infiltration of sand and gravel into the hole being cut by the bit.

In such a manner Michigan became known as the state where surface pipe had to be driven. In the same fashion, many a drilling contractor was required to reach in his pocket for funds to skid a derrick where the 10-in.-drive-pipe shoe became "buggered," necessitating the starting of a new hole.

Almost invariably such an operation resulted in the loss of the pipe already in the hole, and also in the additional expense of skidding the derrick and making new hole.

Those unfamiliar with Michigan conditions may ask what could be encountered in the form of sand and gravel that might cause damage to the drive shoe. I refer to a word used once before in this paper—conglomerate—and in this conglomerate frequently might be found a boulder, possibly as large as this room. With a Cameron drive head and heavy drill-stem pounding inexorably at the surface, and the shoe resting tight against the boulder, we come to a picture where an irresistible force meets an immovable object. The result may be easily pictured as the drilling contractor starts searching for the rig-building contractor to temporarily take over and start him afresh.

When it is pointed out that the thickness of the glacial bed in Michigan varies from 100 to 900 ft., depending on the area where drilling is being done, it may be well understood that the greater the thickness of the drift, the greater the hazard presented. In addition, it seemed to follow that the thicker the drift, the greater the likelihood of encountering large size boulders.

It was this condition that I described earlier in this paper as constituting "real hazard." Likewise, the advent of rotary was hastened by the loss of time and money due to this obstacle.

The second factor referred to earlier, that of "nuisance hazard," presented itself to the cable-tool drilling contractor almost immediately after the drive pipe was landed through the glacial drift.

This nuisance hazard rarely ever brought about the loss of a hole, but the time consumed in fighting it made it almost as costly, and certainly as annoying, as the hazard found in the glacial drift.

At depths varying from 800 to 1,200 ft. in the central part of the state, there is found a pencil-cave shale that rolls in with almost the same persistency as the sand and gravel found in the drift. Use of prepared mud and attempts to displace fresh water with salt water in an effort to wall off this section to permit drilling ahead had beneficial results, but never could a well be drilled ahead to the next permanent-casing point without running a "cave string."

This was a string of 8-in. pipe and fortunate indeed was the contractor who landed his string of 8-in. without having to pull it at least once and straightream the hole.

Accepted cable-tool drilling practice at this point almost invariably required the use of an underreamer and practical cable-tool men devised many an ingenious bit designed to make hole below the 8-in. casing point in an effort to avoid pulling the pipe to straightream the hole.

Frequently after the 8-in. string was set on a shoulder and the hole was reduced, a second cave was encountered. This required pulling the 8-in., straightreaming the hole and rerunning the pipe to a new casing point to shut off the cave, thus permitting drilling ahead.

When it is considered that all this drilling was in a big, wet hole, it may be easily understood that labor and wire-line costs presented a serious factor.

Under the Michigan law, it is required that a string of 6-in. pipe be set through what is known as the Marshall brine sand. From this sand originates the source of supply for several Michigan chemical companies, and to avoid any possible pollution, a string of casing is required.

From the casing point of the 8-in. to the casing point of the Marshall brine-sand string it was comparatively easy drilling with cable tools.

Rotary Drilling

With this background of cable-tool operations in Michigan, it is relatively easy to see how rotary tools found their way into the state and there is some occasion for surprise that their advent was not earlier than it was. . . .

Late in 1936, the Pure Oil Co. opened the Sherman pool, using straight cable-tool operations. Almost immediately difficulties began to arise. This area was truly "boulder country." Attempts to drive pipe met with increasing failures, and it was not long before rotary equipment came into its own to bring about the first continuous rotary and cable-tool combination operation.

It should be recalled that these first rotary tools were used solely to set the 10-in. glacial-drift string. To accomplish this, a small Cardwell unit was used with a 5½ by 12 by 5½ steam mud pump. When the glacial string was set, cable tools were moved in and the hole was completed in that fashion.

There was some discussion at that time about using rotary through the Marshall brine sand, thus eliminating the use of the 10-in. glacial-drift string and the 8-in. cave string, but two factors were believed to militate against this. These were the elements that anticipated increased costs of

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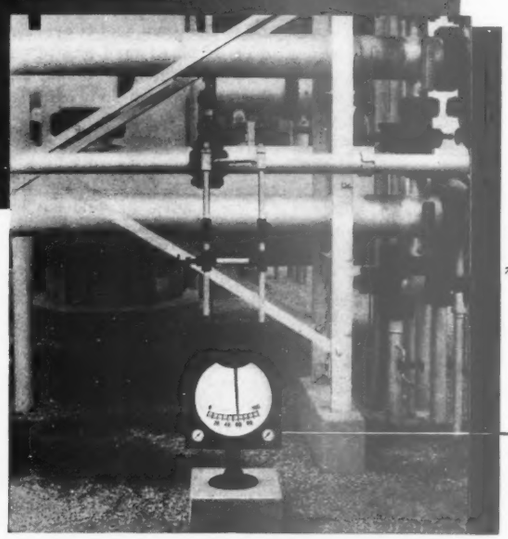

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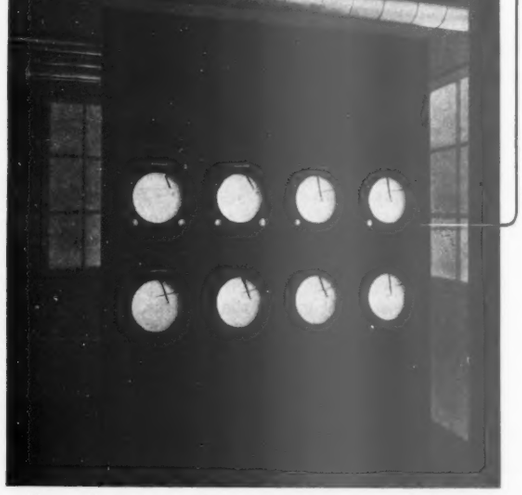

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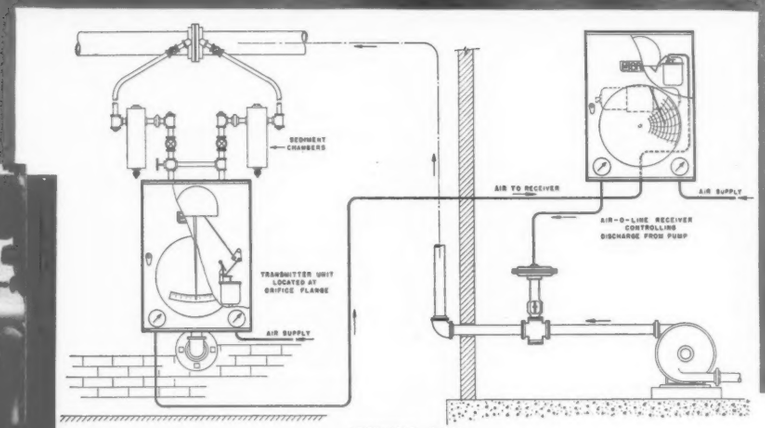

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the rotary tools as against cable tools and the fact that frequently in the Sherman area, there was encountered what we knew as a "suck-hole crevice" where circulation was lost entirely, and it was extremely expensive to recondition the hole.

There were occasions at first in Sherman where the entire string of 6-in. drill pipe was covered by heaving sand and gravel when the drilling mud disappeared in the suck-hole crevice. This would necessitate running a wash-over string with its attendant hazard to a point just above the suck hole. After standing this in the derrick, the drillers would then attempt to pull out the stuck drill pipe. Occasionally the entire column of fluid would not disappear in the crevice, leaving the hole partially filled.

When this occurred, the wall would cave down to the point of the fluid level and these cavings would frequently settle around the drill collar and bit before the tools could be raised off bottom.

It may seem strange that circulation could be lost with this swiftness, but I can assure you that some of our cost sheets bear out the accuracy of the above statements.

Strangely enough, this crevice was found only in the Sherman area to any marked degree. Rotary tools used elsewhere in Michigan have encountered this hazard so infrequently as to eliminate it almost exclusively from the dangers of rotary drilling. On those occasions when it is now encountered, field practice has dictated that the operator furnish sufficient 10-in. pipe to shut off the upper drift and the hole is then reduced and carried ahead.

The degree of porosity in this co-called "crevice" horizon carries from a point where the mere weight of the column of fluid is sufficient to push it back into the formation to a point where the use of mud fluid carrying sugar-beet pulp or cotton-seed hulls is adequate to guarantee circulation.

Michigan drilling contractors have been more successful in the use of sugar-beet pulp than they have in the use of cotton-seed hulls. This may have been due to the fact that the pulp material was available nearby when lost-circulation problems presented themselves, but at any rate, the use of cotton-seed hulls in Michigan rotary drilling has never been extensive.

With the extended use of rotary, new drilling operations were devised to reduce costs and increase speed. At the outset it was common practice to use a 15¾-in bit to drill the entire drift section. This was necessary, of course, when a glacial-drift string was set. At the top of the hole to a depth varying from 100 to 250 fet., a fishtail bit was used and the large hole was then completed with a rock bit.

Later, after the practicability of carrying the rotary hole through the Marshall sand was established, the big hole was carried only to a point where the danger of lost circulation was virtually eliminated and the hole was then reduced to 8¾ in. and completed to the casing point below the Marshall brine sand.

Mud Conditioning

Rotary-drilling contractors operating in Michigan learned early that the less big hole drilled, the easier to keep it in condition. The big hole had a marked tendency to cave and crumble and the sooner the hole could be reduced, the more saving that could be made.

Michigan drilling contractors have tried many experiments with mud. Some have used prepared mud and others have used native clay. There have been attempts to use pottery clay shipped in from the potteries of Ohio, but this experiment was none to successful.

There are two schools of thought in connection with mud conditioning in our state. To use native clay, which in its original state is considerably cheaper, it is necessary to spend considerable time getting it mixed before dumping it in the suction pit ready for drilling. Likewise, a mixing tank is required and in cold weather there is no doubt but what steam would do a better mixing job than would straight water with the clay. The one distinct advantage that clay has over prepared mud compositions is the question of original cost. Artificial mud is much more expensive than native clay, although the time of mixing it is less, and it is a debatable question whether it possesses any greater wall-building qualities than the readily available native clay. . . .

What virtually every contractor seeks is the attainment of a mud having sufficient wall-building character to cake the hole and enough weight to displace the material cut by the bit. It has been found in later years that after the glacial bed had been drilled and the hole reduced that it is safe to thin up the mud in completing the hole. although care must be exercised not to get the mud too thin to permit the glacial section to crumble by reason of having the wall washed away.

Pipe Costs

Before discussing the saving in time as between rotary and cable-tool drilling to the Marshall brine sand casing point, let us look at a question of pipe costs.

Assuming that the glacial section was 600 ft. thick, the cost of drive pipe and shoe for this well would approximate $1,500 by the time the pipe was laid on location. Adding to this the rental or depreciation charges on a 1,200-ft. string of 8-in. to wall off the cave and the pipe cost. raises $360 to $1,860.

All this pipe is eliminated in a rotary-drilled hole where the suck-hole crevice is not encountered. Instead, a 40-ft. joint of second-hand conductor pipe is cemented at the surface and this constitutes sufficient "surface" pipe to drill 1,750 ft. to the casing point of the Marshall sand string. The cost of this 40-ft. conductor pipe will not exceed $150. Thus, there is an immediate saving of approximately $1,700 in pipe at the outset.

All this would make it appear that rotary drilling could be undertaken at a real saving over a cable-tool operation, but such is not a full statement of the facts.

In the first place, there exists some salvage in the glacial-drift pipe when the well is abandoned. There is no fixed rule on the amount of this salvage, for it will vary between wells, some enjoying a 100 per cent recovery of the drive pipe on abandonment and others failing to recover any drive pipe whatsoever. Experience of major companies operating in the state indicates that it is safe to expect a 30 per cent recovery on the drive. At the same time, through the use of rotary, the investment is never in the hole originally and, therefore, no carrying charge or depreciation has to be made against the investment.

However, a new problem has presented itself in the practice of pipe recovery in a rotary hole. Where, under a cable-tool operation, the producer recovers virtually every foot of the 6-in. string set through the Marshall sand, such has not been the case in rotary holes. The glacial drift, which is open, has a tendency to cave after the brine-sand string has been set, and with gravel and sand lodged against the collars, there has been a considerable loss experienced in salvaging the 6-in. Marshall string. This condition has been improved somewhat by circulating a clear Aquagel mix ahead of the cement when cementing the Marshall string. . . .

Michigan operators employing combination rotary and cable-tool drilling use screw-type bradenheads tying the 6-in. to the conductor pipe. If a production string is set, a second bradenhead is set on the 6-in. In this way, any flowing-water sands are held completely in check.

There has not been enough experience as yet to determine the exact difference in pipe saving through the use of rotary, although there is no question but what the saving will be appreciable. It will not be until many present producing wells which have been drilled with rotary are abandoned that it can be determined just how much salvage will be lost in pulling the 6-in. Marshall sand string.

Time Factor

This brings us to an elemental factor of time. A study of drilling records available to us indicates that the time consumed by cable tools in reaching the Marshall sand-casing point has represented as high as two-thirds of the total time required for drilling the complete hole. In other words, in a well 3,800 ft. deep with the base of the Marshall at 1,750 ft., it might require 30 days to drill 1,750 ft. whereas the remaining 2,050 ft. would take only 15 days to complete.

On the average, it safe to assume that the cable-tool operation consisting of driving pipe through the drift, setting the cave string, drilling ahead through the Marshall and setting the brine-sand string will take three-fifths of the total elapsed time required to drill the well.

The average running time for a 3,850-ft. cable hole in Central Michigan, where the drillers are familiar with localized formation conditions, is approximately 40 days. This is where normal operation prevails.

Through the use of the rotary, this average is cut to less than 25 days and there have been runs to 3,800 ft. in the Freeman-Redding pool of less than 20 days, although these are the exception rather than the rule.

The striking saving in time occurs in comparing the cable-tool operation with the rotary operation at the top of the hole. Using rotary, the average 1,750-ft. hole is drilled in 9 days or less, including rig-up time and mixing mud before drilling is started. Where ideal drilling conditions prevailed, there have been runs of as low as 6 days, including rigging up and tearing down.

Compare this to the 20 to 25 days required to make the same amount of cable-tool hole and one can see how much more attractive the rotary is to the producer.

Rotary-tool operators in Illinois and the Southwest, who are accustomed to virtually pumping down hole just below the surface, should not deride these records, for the formations carry many tough lime shells in the shale bodies that literally eat up bits and cause them to go out of gage.

The average number of bits for drilling rotary hole to the Marshall is six, not including the glacial drift big-hole bits. The latter will drill two and sometimes three surface holes before they have to be laid down. Excessive sand in the drift formation makes it inadvisable to attempt to retip the big-hole bits because of extreme wear on the bearings. In other words, the bearings and teeth on the big-hole bits virtually wear out together.

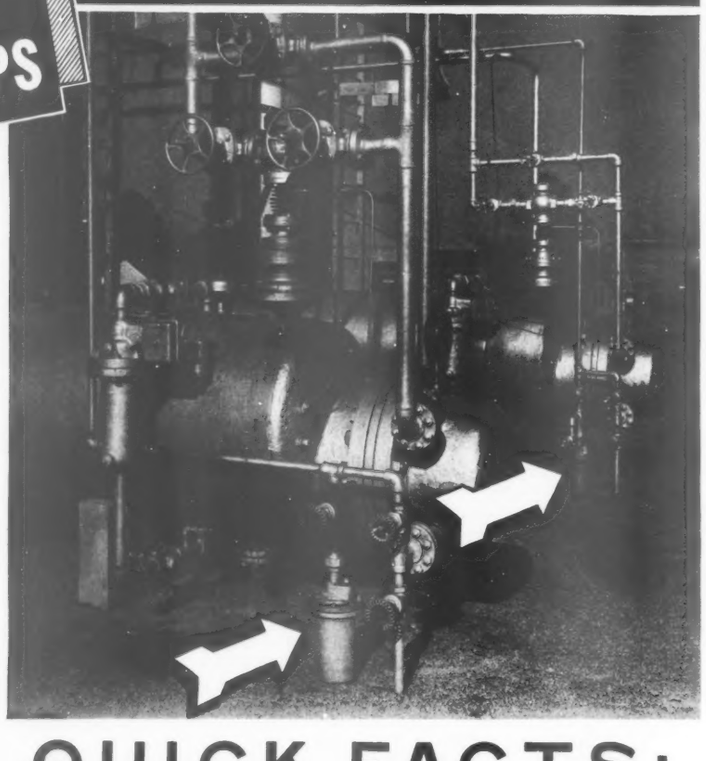
No consistent effort has been made in Michigan to use retipped or repaired 8¾-in. rock bits and it is highly questionable whether such a practice would be advisable because of the many lime shells found in the upper sections of the hole.

If too strong a case has been made in favor of rotary drilling at the top of the hole, let it be said that the reverse is true after the tools start out below the Marshall brine-sand string.

Although the state has had only two rotary tests carried below the Marshall sand and it is alto-

(Continued on Page 70)

ARMSTRONG *Inverted Bucket* STEAM TRAPS *for* Draining Reboilers



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Pumping Equipment And Practices in New Illinois Pools

By W. C. WHITE and M. A. SHERWOOD

Pure Oil Co., Olney, Ill.

Shell Oil Co., Inc., Centralia, Ill.

A.P.I.

During the past 4 years, approximately 9,000 wells have been completed in the Illinois basin. To produce the oil discovered therefrom, it has been necessary to modernize central powers and individual pumping units. Modern power installations have been made that pump as many as 30 wells in an area 2 miles long and 1 mile wide. Rod lines are in use having a length of slightly over 1 mile. The high efficiency obtained by these powers is a result of improved design.

Actual tests reveal that power consumption during the winter months is as much as 30 per cent higher than in the summer months. The use of time-switch control has resulted in lower demand on electric-power systems.

This paper was presented at the spring meeting of the eastern district, A.P.I. Division of Production, in Pittsburgh, Pa., April 17-18.

DURING the past 4 years, revival of drilling activities in the Illinois basin has resulted in the development of some eight major pools, in which production has been obtained from both limestone and sandstone formations. As an indication of the magnitude of this development, an estimated total of 9,000 wells, ranging in depth from 300 to 4,600 ft., have been drilled.

Of the limestone formations, the Noble, Clay City, and Cisne pools, producing from the McClosky horizon, are outstanding. These pools are producing from depths of approximately 3,000 ft. The wells have initial potentials frequently ranging as high as 1,500 bbl. daily, with an average of 500 to 1,000 bbl. daily. The reservoirs in these pools are of the gas-expansion type with no bottom-hole or lateral invasion of water apparent. Due to the high permeability of the limestone formation, a large percentage of the ultimate recovery is obtained early in the well's life under natural-flow operations. The remaining production is obtained at greatly reduced rates by pumping extending over several years' time.

Of the sandstone formations, the Salem and Louden are outstanding. While the Louden pool produces entirely from three sandstone formations, the Salem pool is currently producing from two sandstones in addition to four limestone formations. In most of the fields, sand production varies in depth from 300 to 3,000 ft., with the majority of the wells from 1,300 to 1,800 ft. in depth. Permeabilities are generally low in the sandstone formations, and initial potentials range from 50 to 300 bbl. However, some sand wells have potentials as high as 1,800 bbl. daily. The Salem and Louden pools are primarily gas-drive reservoirs, although some edge-water encroachment has been noted. A few sandstone pools are being depleted under active water-drive conditions, the Dix pool being a good example. The tight, compact sandstones encountered require shooting with nitroglycerin in order to obtain satisfactory production rates, and the average production-decline rate is in the neighborhood of 50 to 60 per cent the first year of capacity operation. A majority of the wells required pumping equipment initially, while the rest have a relatively short flowing life. . . .

The necessity of ascertaining at an early date the type of reservoir encountered, as to whether it is of the gas-drive or water-drive type, cannot be too strongly stressed, and the volume of fluid which will ultimately be handled must be carefully estimated to serve as a guide in determining the size of pumping equipment to be installed. Available geological information and production history of not only the pool in question, but also comparable pools having lengthy operating histories, will usually permit reasonably accurate predictions of future operating conditions.

For the most part, the oil is produced by sucker-rod pumping after natural flow ceases, although there are a few installations of submerged electric centrifugal pumps and hydraulic pumps. In the early days from 1905 to 1920, standard-rig fronts and band-wheel power with steam or gas-engine prime movers constituted the surface pumping equipment. More recent installations include geared powers and individual pumping units with gas or oil engine or electric motor. Some pneumatic heads are also used. The relatively shallow depths and low producing rates of wells in the basin have been largely responsible for development of the present efficient small individual pumping unit. Likewise, modernization of power installations has been promoted by varied conditions encountered in Illinois operations as well as important economic advantages to be obtained.

Central Powers

In Illinois fields, power installations are widely used under suitable conditions. The factors tending to make power installations attractive are usually (1) well-grouped leaseholds and (2) flat terrain.

Advantages of modern central-power installations may be summarized as follows:

1. The overall mechanical efficiency of modern power installations exceeds that of any other form of group pumping or multiple-well hookups, whether pneumatic, hydraulic, or electrical.

2. Central-power equipment, together with modern jack installations, permits high-capacity withdrawals, particularly during early pumping life of the wells, provided such demand is not simultaneous for entire group of wells.

3. Maintenance cost is very low, particularly with improved type of construction now being used.

4. While power operation permits intermittent pumping by properly regulating the pumping schedule, it is also possible by variations in length of jack stroke to secure a pumping cycle fairly well adapted to the need of each well. Changes in the length of power stroke can also be obtained since modern powers are equipped with adjustable cranks.

By use of multipliers, a jack stroke of 54 in. can be obtained with 36-in. stroke on the power. With 2-in. i.d. pumps, production in excess of 400 bbl. per day has been obtained in some areas.

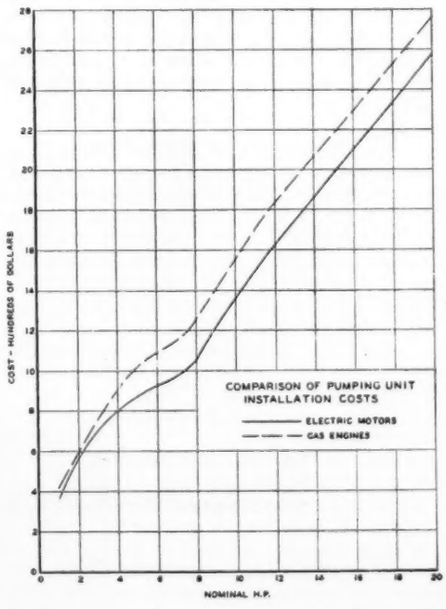
5. Rod-line impulses are an excellent indicator of pumping condition of individual wells, and it is not always necessary to visit each well to determine if it is pounding, pumped off, or has failed to pump.

6. The overall mechanical strength of the operating units comprising power installations is protection against accidental shutdown. Typical are 150-hp. geared powers driven by two-cycle gas engines with special oil-cooled pistons.

Maximum Pumping Radius

It is considered that the maximum radius of efficient rod-line operation is 1 mile, although it is entirely possible to operate wells satisfactorily on rod lines having a greater length. At greater distances, the rod-line cost per well rises to the point where it is advisable to consider the installation of individual units or connection to another power setting. In Illinois operations, the largest area which can be served efficiently by a single power has been found to be 1 sq. mile, containing 32 wells on a 20-acre spacing pattern.

Generally an ideal central-power location is not obtained in actual practice owing to a combination of difficulties, such as numerous road crossings, or unfavorable terrain which increases cost to an unreasonable point. One power in operation in the basin is handling 30 wells in an area 2 miles long and 1 mile wide. The longest rod line is slightly over 1 mile, and the operation is entirely satisfactory from the standpoint of jack motion and horsepower consumed. The operation of these rod lines of such unusual length has been made possible by the development of efficient rod lines which utilize familiar antifriction devices with very little horsepower loss. Dynamometer cards taken simultaneously at jack and power show that power losses have been reduced to an average of about ⅛ hp. per 1,000 ft. of line and in some cases even less. This is apparently 10



per cent of the accepted power-loss figure for ordinary doll-head installations.

Central-Power Disadvantages

Some of the disadvantages of central-power installations are as follows:

1. Inflexibility. This is more with respect to power location than adaptability to production needs, and was a serious drawback to power operation in the past. However, the present power with its high peak torque capacity, efficient rod lines, with frictionless bearings, adjustable stroke, both at jack and at power, offers almost as wide a range of producing flexibility as an individual pumping unit. It is desired to point out that while the upper limits of productive capacity of the power may be seriously affected by increased loads caused by water invasion, such cases are expected to be rare in the lime formations where powers are most generally applied. In any event, the power operation can be supplemented with individual pumping units in those few cases where necessary.

2. Full efficiency of counterbalancing is not usually reached with power operations. However, it is an easy task to counterbalance the jack, since the motion with antifriction rod lines is practically of a simple harmonic type. In addition, the power itself can be better balanced by the use of modern rod-line equipment, since the effective downstroke pull is transmitted directly to the power eccentric, lessened only by the small friction loss.

3. Limited application. Maximum fluid capacity of power is limited. In the case of the individual pumping unit, the limitation is usually the peak torque capacity of the gear box, while with the power, it is usually the maximum length of stroke and number of strokes per minute which limit the fluid capacity. Another limitation is rough terrain. This limitation is more economic than mechanical. It is mechanically possible to operate powers under almost any condition, as evidenced by the power installations on extremely unfavorable ground conditions in Pennsylvania and also power installations in Illinois where the rod lines will operate under water part of the year. However, it must be pointed out that such installations are not always economically feasible, since serious interference with rod-line efficiency occurs. Consequently, overall costs are increased.

4. Central-power operation is not suitable for isolated wells, since its chief economic advantage is the ability to handle a large number of wells.

In summation, it is desired to mention that, in spite of increased cost per foot of rod-line construction, these modern power installations result in savings of $150 per well over prior methods of construction. This is because it is possible to handle a greater number of wells on the same size power.

Individual Pumping Units

Individual pumping units for producing individual wells have found wide application in all Illinois fields. The prime mover is self-contained and is usually some type of gas engine. However, in group operations, electric motors are used with energy supplied from a central source.

Broadly speaking, individual pumping units have the following advantages:

1. Flexibility. A well can be operated when desired, and at a production rate independent of the operation of other wells.

2. Large volumes of fluid can be handled more satisfactorily.

3. More efficient counterbalancing can be obtained.

4. Individual units are especially adaptable to an area having rough terrain or subject to flooding.

5. Individual units are ideally suited for isolated leases having a limited number of wells. It is possible to operate more than one well by a single unit equipped with backside attachments. Also portable units are applicable during development period and flush pumping prior to installation of group pumping equipment. . . .

Selection of Unit

A wide range of sizes is in use, varying from 3 to 30 hp., with a majority having a 3 to 7½-hp. rating. The A.P.I. formula[1] is exclusively used in determining the horsepower rating of units. In determining the size of unit to be installed, it is necessary that an estimate be made of the maximum volume of fluid to be handled. Thus, it is essential that a thorough study of all geological data be made in order to determine whether the pool will be depleted under water-drive conditions or gas drive. Also, general knowledge of reservoir characteristics in the area will often prove to be a valuable guide.

After a few units are in operation, original estimates of productive characteristics may be checked by dynagraph and bottom-hole-pressure tests. These records should be used in the selection of future units. They can also be used in properly counterbalancing the units and improving the efficiency of the pumping equipment.

Prime Movers

Multicylinder high-speed or single and two-cylinder slow-speed gas engines are generally used where natural gas is available for fuel. Where the leaseholds are favorably located for group pumping but are unfavorable for power installation, electrical prime movers can be utilized efficiently. It should be pointed out that the energy cost is somewhat higher when electricity is used, but the maintenance expense of electric motors is considerably lower than that of gas engines. The type of electric motor desired for this service should be rugged, and able to withstand adverse weather conditions and hard service with minimum down time. These characteristics are found in the three-phase squirrel-cage "high slip" induction motor with splashproof construction.

Pumping Practices

In general, operating conditions in Illinois conform quite closely to those in other areas, but it is desired to call attention to the effect of low temperatures on power requirements of pumping equipment. Tests in one field indicate an increase in average power consumption of from 20 to 30 per cent during cold weather. There are benefits to be obtained through the judicious use of time-switch control of electric-powered pumping equipment. If time switches are used on wells employing electric motors as prime movers, it is possible to pump the well on any predetermined schedule. These switches will allow more efficient operation of a given group of wells, since less direct attention is required. In many cases, production of stripper wells has been increased by intermittent pumping. In addition to the direct savings possible through the use of time switches on electric-powered pumping equipment, many intangible savings are realized, such as the decreased use of the pumping unit, rods, treating equipment, and tubing. Use of time switches will result in a reduction of the load on the power system, which will decrease demand charges where energy is purchased, or permits construction of smaller plants where power is generated.

Conclusion

To achieve minimum installation costs and realize maximum efficiency with attendant economy in operation, equipment should be selected with due consideration to the factors outlined above. This is especially true in Illinois where low ultimate recoveries yield but limited profits.

[1]A.P.I. Std. 11-E: Rating of Gear-Speed Reducers.

Acknowledgment is made to Messrs. Bart De Laat, Pure Oil Co., Olney, Ill.; R. E. Hammond, Carter Oil Co., St. Elmo, Ill.; and C. G. Herrington, Carter Oil Co., Mattoon, Ill., for assistance in preparation of this paper and to Pure and Shell companies for permission to present.

●

Combination Rotary and Cable Tool Drilling in Michigan

(Continued from Page 67)

gether too early to pass judgment on the efficiency of rotary from top to bottom in our state, it can be said without fear of contradiction that available information indicates that cable-tool drilling is superior in virtually every respect as hole is made from 1,750 to 3,850 ft.

From the base of the Marshall sand to the Dundee or Monroe producing horizon, there is found approximately 1,300 ft. of slick, flinty lime. The balance of the hole is broken lime and shale. Very little sand is encountered and even where thick streaks are encountered, it is so abrasive as to cause excessive wear on a rotary bit and drill pipe.

This drilling is made to order for cable tools. Runs of 200 ft. or more are made between the base of the Marshall and the top of the Traverse lime, found at approximately 3,200 ft. in a hole of 3,850 ft. Even the Traverse lime offers no serious obstacle to cable-tool drilling. . . .

No conclusions are offered here as to the relative question of contracting costs between rotary and cable-tool operations in drilling the upper hole, because field prices paid by the producers offer the best proof in this respect.

Drilling costs to the producer are now on approximately the same level as they were when cable tools alone were used. A spread of 20 cents a foot would cover any increase in the footage price to the producer whose contractor uses rotary in the upper hole, and, in some areas the field price for combination drilling has been the same as for straight cable-tool operation.

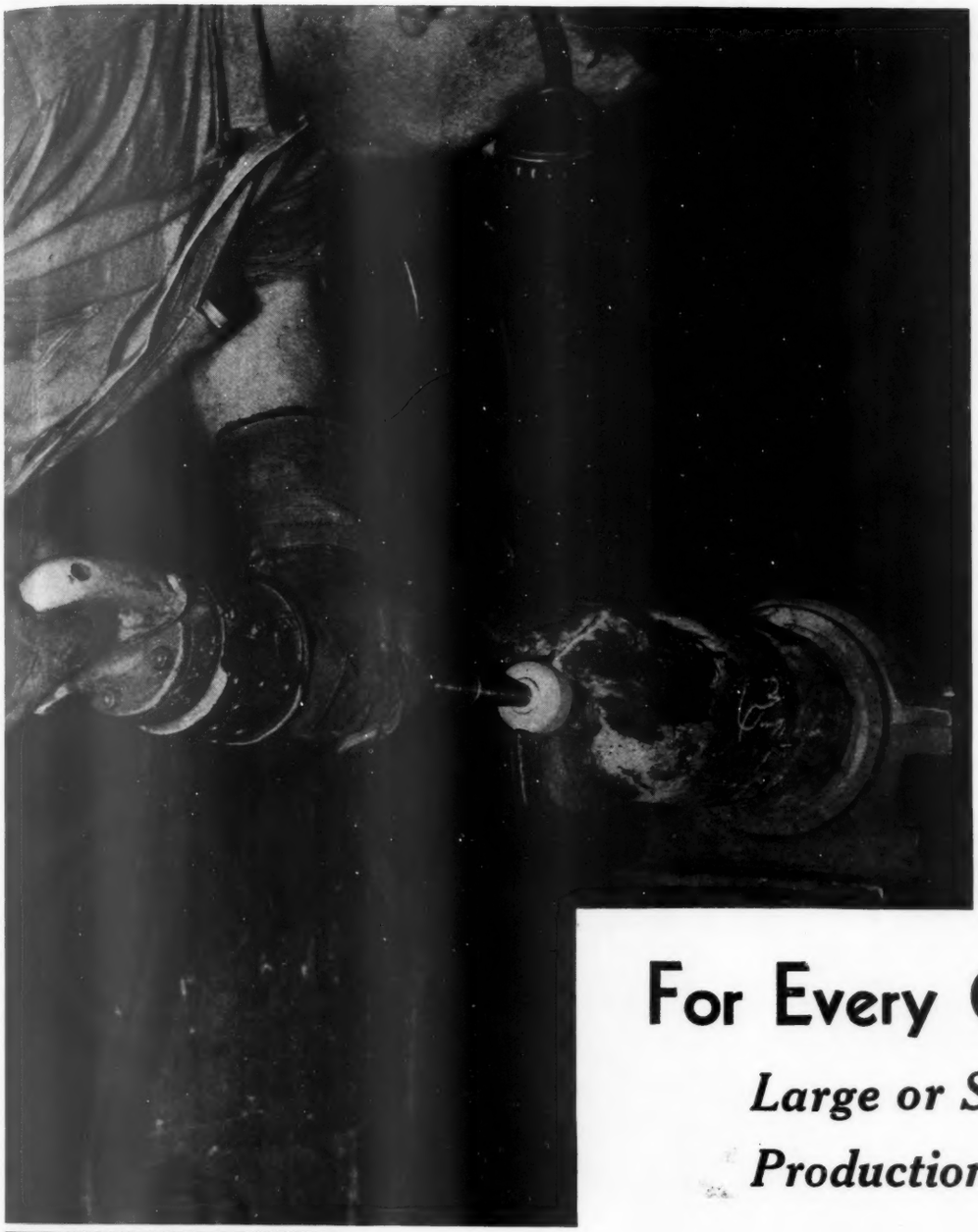
When rotary first entered the Michigan area, combination-drilling-footage prices were higher than straight cable-tool prices, but it was felt that savings in pipe investment and greater speed justified the additional outlay for footage charges.

Conclusions

In conclusion, it is our belief that rotary is in Michigan to stay. This may prevail only insofar as light rigs, even to slim-hole rigs, are concerned, although I question this. There probably is a definite field for heavy-duty rotary equipment in future Michigan development. I believe that every progressive oil man in the state concurs in this belief.

At the same time, I cannot reconcile a picture of future development in Michigan where cable tools do not have a place. They have proven less expensive in the lower sections of the hole on the brief comparison available to us and it seems scarcely reasonable that rotary will ease them out of the picture as long as oil is produced in Michigan from its present known horizons.

In closing, I wish to state that I have chosen no sides as between the two schools of drilling practice. It offers a pleasant picture to work in Michigan with its many natural advantages where the members of the old school of up-and-downers can find so much in common with the men who must earn their living always turning to the right.



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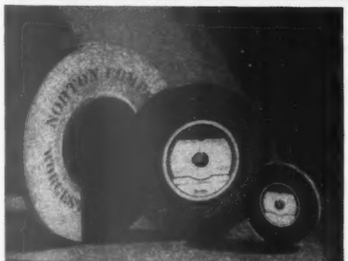

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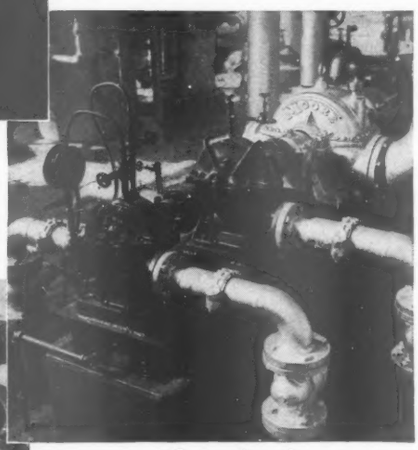

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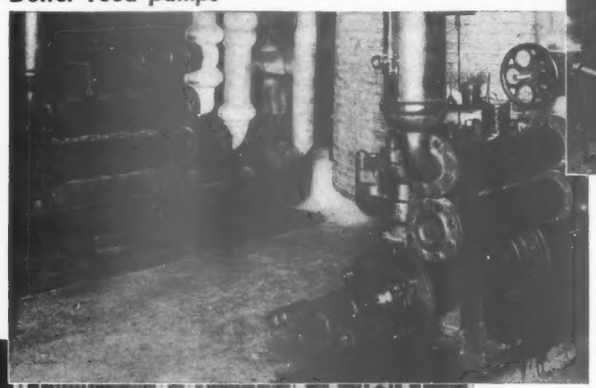

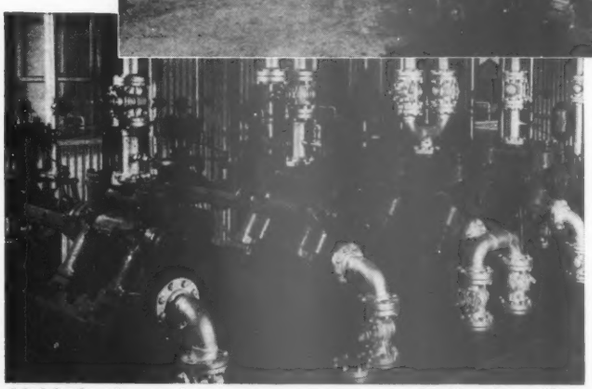

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QUESTIONS ON TECHNOLOGY

By W. L. NELSON, TECHNICAL EDITOR

Sweetening With Alkaline Polysulfides

On Page 2 of the paper of Schulze and Gregory on "Copper Sweetening Methods" the statement is made that free sulfur and hydrogen sulfide may be removed from gasoline by contacting with acqueous solutions of inexpensive and readily available alkaline polysulfides. Advise the names of several of these polysulfides and details of their application?—D. L. W.

During contacting with sodium hydroxide (soda lye) the following reactions with hydrogen sulfide and free sulfur takes place:

$$2NaOH + H_2S \rightarrow Na_2S + 2H_2O$$
$$Na_2S + \text{sulfur} \rightarrow Na_2S_2,\ Na_2S_4,\ Na_2S_5,\ \text{etc.}$$

Both hydrogen sulfide and free sulfur are present in gasoline and hence the result of a caustic wash is the formation of a sodium polysulfide solution. Such a solution is the normal product of a caustic-washing operation. This fact is often overlooked because of the greater interest that has been centered on the removal of mercaptans sulfur compounds by means of a caustic wash.

The flow diagram of a caustic-washing system was shown on this page in the issue of January 30, 1941. Three settlers were employed but only the first one of these was used for sulfide removal. A similar use of caustic washing was shown as a part of the copper-sweetening flow diagram given in the December 26, 1940, issue.

First Use of Octane Numbers

Will you please give me any information you may have as to the earliest date at which oil companies first began to incorporate an "octane number" specification on their regular grades of U. S. Motor gasolines?—J. R. N.

The antiknock properties or detonation characteristics of gasolines was first evaluated by means of so-called benzene equivalents. Thus, if the gasoline knocked with the same intensity as a 50-50 mixture of benzene and a standard straightrun gasoline, it was said to have a benzene equivalent of 50. This was the common method of evaluation until about 1930 and in many instances it was used until 1933.

In 1927, Dr. Graham Edgar of the Ethyl Gasoline Corp. suggested the use of isooctane (2,2,4-trimethyl pentane) and normal heptane as a measuring stick of antiknock properties (Ind. Eng. Chem. 19,145, 1927). The use of isooctane as a standard was recommended by Committee D-2 of the American Society for Testing Materials as a tentative standard in 1930. Not until September 1931 was a standard engine (C.F.R. engine) recommended by Committee D-2. A method of procedure of operation was studied at about the same time but a completely satisfactory procedure has not even yet been found. This is evident from the frequent changes such as the C.F.R. research method of 1932, the C.F.R. motor method of 1934-38, the LL-3 method of 1938-39, the A.S.T.M. method of 1939-40, and the special method now being employed by the U. S. Army. Some small modifications of the engine have also been made.

Although the Ethyl company laboratories were aware of the octane number of their standard ethyl reference fuel as early as 1930, they and most others did not utilize the term octane number at that time in stating specifications. Obviously, the Series B Ethyl test engine was used at this time rather than the C.F.R. engine. The Ethyl Gasoline specifications of about 1930 called for an octane number of 74, and in 1934 the Q grade of Ethyl Gasoline was announced (octane number over 60) and the octane number of standard Ethyl Gasoline was raised to 76.

The Western Petroleum Refiners Association was among the first to state octane numbers in specifications, although aviation specifications had required octane number at earlier dates. In April 1933 the proposed octane numbers of the W.P.R.A. were as follows:

No. 1 low bracket	59 and lower
No. 2 middle bracket	60-66
No. 3 top bracket	67 and higher

The American Society for Testing Materials adopted tentative standards for gasoline (which included octane number) in 1937, revised in 1940, but the specification is still classified as tentative.

In a statistical way, octane numbers have been reported back as early as 1928, but in part these may have been approximations arrived at by general correlations between benzene equivalents and octane number. Thus, the average octane numbers of fuels since 1928 have been somewhat as follows:

Year—	Oct. No.	Year—	Oct. No.
1928	56	1935	69
1930	60	1936	69
1931	60	1937	70
1932	61	1938	72
1933	65	1939	73
1934	69	1940	73
		1941	74

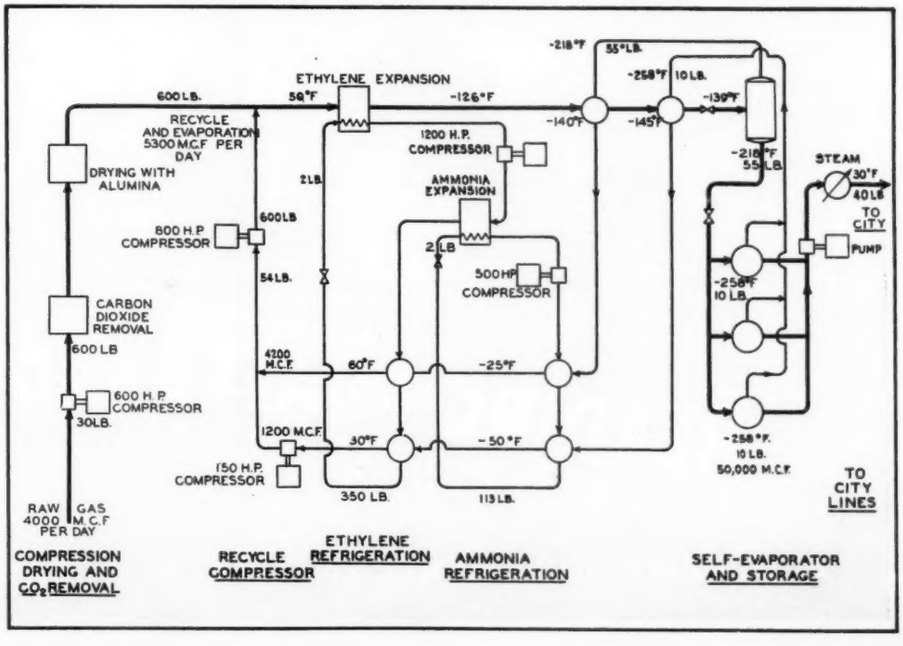
Simplified Flow Diagrams

Liquefied Natural Gas for City Gas

I have heard rumors of the liquefaction of natural gas for purposes of storage. Can you tell me anything of such schemes or direct me to references?—M. G. R.

You may have heard of the liquefaction of butane and propane for home or plant use at some distance from natural-gas lines, but it is probable that you wish to know of the installation of the Hope Gas Co. and Peoples Gas Co., at Cleveland, Ohio, in which gas is liquefied by compression and cooling so that it can be stored as a liquid at minus 258° F. for use during the peak-load demands. The plant was built at a cost of about $750,000 in order to avoid the construction of a 12-in. extension line which would have cost about $2,500,000. The plant was described at the meeting of the American Gas Association at Atlantic City in October 1940 by R. W. Miller and J. A. Clark.

The operation consists essentially of compression of the gas and refrigeration by self-evaporation of part of the liquefied gas. In addition, two auxiliary refrigeration systems, one employing ethylene and the other ammonia, are operated. Except for cooling of the many compressors, no cooling by water is required. Heat exchange between the various fluids is employed extensively. The entire arrangement is shown in the flow diagram on this page. The liquefied gas is stored at minus 258° F. at 10-lb. pressure in well-insulated tanks. The daily evaporation from these storage tanks by heat infiltration amounts to less than 3 per cent, and hence the compression and refrigeration equipment is operated to take care of this 3 per cent, a recycle of about 8 per cent, and a small amount more which is accumulated in the storage tanks for future use.



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Low Prices of Natural Gasoline Cause Drop in Plant Capacity

(Continued from Page 47)

the number of plants has dropped from over 1,100 in 1924 to the present total of 609, their combined capacity has increased from 3,300,000 gal. daily to 11,276,000. Thus average-size plant capacity is now 18,500 gal. daily whereas in 1924 it was only slightly over 300 gal. The plant of today is obviously not comparable to that of several years ago, and it is through the increased extraction and operating efficiency made possible by large-scale production that plants can be profitably operated.

Texas Has Greatest Drop

As is shown in the accompanying table listing number of plants and capacities by states, Texas plants dropped in number from 151 to 144 and in capacity from 4,150,550 to 3,949,800 gal. Relatively few new plants were constructed in that state during the year and little enlargement work was done. The decrease, however, was not due mainly to abandonments, but rather to the large number of companies reporting smaller capacities for individual plants. Thus this drop in capacity was probably due to more rigid proration, either in the form of lower allowables or shutdown of fields, or through reduced gas-oil ratios. In most instances facilities for manufacturing larger quantities of natural gasoline still exist at the plants, but the equipment does not represent capacity as the gas is not available for processing under the present degree of proration.

Latest Bureau of Mines figures, February 1941, show Texas produced 80,399,00 gal. during that month or 2,870,000 gal. daily. This would indicate plants in that state were operating at an average of 72.8 per cent of their capacity; a year ago in February they were operating at an average of 51.75 per cent of their daily capacity. During February the industry as a whole was utilizing only 61 per cent of its capacity. Thus Texas plants this year have much less idle capacity as compared with a year ago, and due to the large amount of natural gasoline produced in that state its increased utilization of facilities has greatly influenced the industry's average.

A great portion of Texas' increased production is due to growth of the Gulf Coast area in importance. During the first 2 months of last year that district produced a total of 23,250,000 gal., according to the bureau, while during the like period of this year it produced 39,495,000 gal. The report also shows East Texas plants are operating almost 10 per cent below a year ago, while Panhandle plants are producing about 5 per cent more natural.

TABLE SHOWING TRENDS IN THE NUMBER OF NATURAL-GASOLINE PLANTS AND THEIR COMBINED CAPACITIES

	No. of plants	Daily capacity (gallons)
April 1, 1941	609	11,275,985
May 1, 1940*	651	11,354,463
May 1, 1939	653	10,832,081
May 1, 1938	680	10,888,507
May 1, 1937	710	10,691,352
May 1, 1936	841	10,083,687
May 1, 1935	850	9,909,797
May 1, 1934	882	10,241,989
May 1, 1933	919	10,308,354
May 1, 1932	948	10,536,182
May 1, 1931	987	10,531,511
May 1, 1930	1,071	9,541,320
May 1, 1929	1,124	8,695,727
May 1, 1928	1,229	7,865,652
May 1, 1927	1,148	6,947,264
May 1, 1926	1,063	5,121,000
May 1, 1925	1,143	4,642,561

*1940 data revised.

California Unchanged

The number of plants in California remained unchanged from a year ago, the three new plants built during the year being offset by abandonment of a like number. Capacity likewise remained relatively the same, the state's total declining only 40,000 gal. to 3,033,500 gal. daily. The amount of idle capacity, however, showed a slight increase. This gain, plus the decrease in total capacity, therefore accounts for the decline in California output during the first 2 months of this year from a daily average of 1,590,000 to 1,550,000 gal. Most of this decrease in output is credited to plants operating in the Kettleman Hills area.

Greatest relative gain in plant capacity took place in Illinois. Despite a drop of four in number of plants, the combined capacity of plants in that state today is 82,397 gal. greater than a year ago when it totaled 69,397 gal. One large plant was placed in operation in the Salem field during the year and capacities of most other large plants were increased. The four plants abandoned were all small so that this disappearance had relatively little effect on the state's capacity.

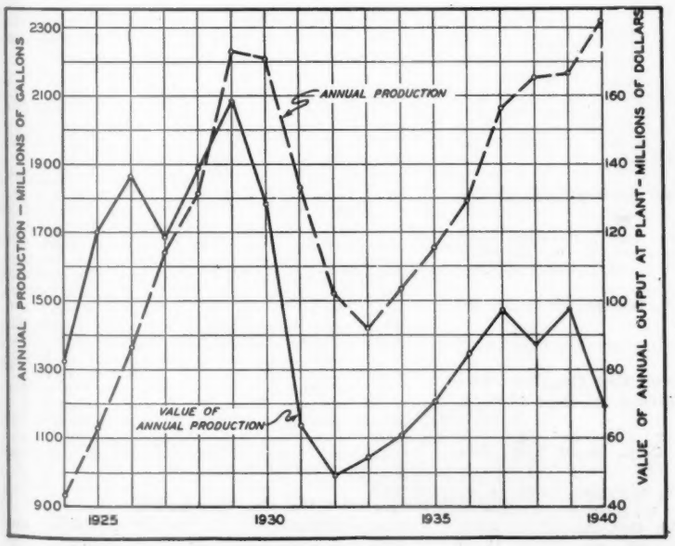
Oklahoma easily retained its rank as third largest state in plant capacity, but both the number of plants and combined throughput decreased. The number of plants dropped from 114 to 105, and daily gallonage from 1,953,450 to 1,912,050. Kansas showed a gain of 64,000 gal. in capacity, to 378,500 gal., but number of plants dropped from 15 to 14. Louisiana and New Mexico plants also gained in capacity, while Pennsylvania and West Virginia continued to decline in both number of plants and in daily throughput.

Effect of Pressure Maintenance

Several of the natural-gasoline plants built east of California during the past year were in conjunction with pressure-maintenance or repressuring operations. This tie-in between natural-gasoline plants and primary or secondary-recovery operations has been becoming more pronounced during recent years, but during 1940 the relationship was even more accentuated. Also as operators become more conservation conscious, either due to more rigid proration or to increase the ultimate oil recovery from their properties, these operations are being carried out through unitized or cooperative agreements. Through adoption of flow schedules the plants are thus able to operate at more constant levels instead of being built for peak production.

The largest such project in operation is in the K.M.A. field of North Texas where five plants operate in conjunction with a pressure-maintenance program. The two most recently announced projects are in the Maljamar and Loco Hills fields of New Mexico. Operators in those two fields have formed cooperative groups and will start construction of natural-gasoline plants in the near future.

In this year's survey for the first time are included the capacities of various companies for manufacturing liquefied petroleum gas (L.P.G.). The individual company L.P.G. capacities are listed following their natural-gasoline capacities in the personnel list beginning on Page 76. A separate article dealing with the results of this L.P.G. survey is included elsewhere in this issue.



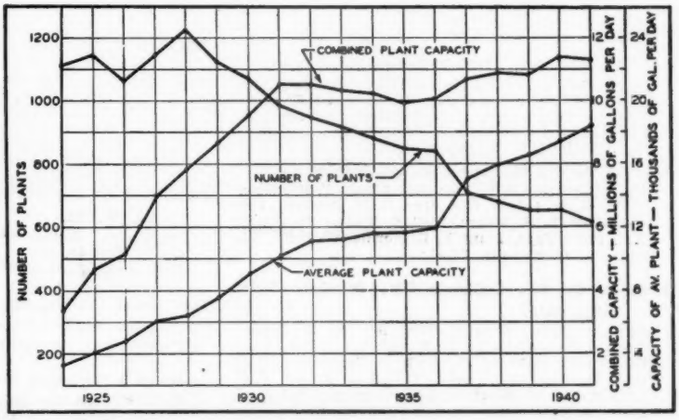


Fig. 1 (left)—Annual production of natural gasoline and its estimated market value from 1924 to 1940 (Bureau of Mines data). Fig. 2 (above)—Combined plant capacity and number of plants, showing the continuing climb in average plant capacity

Personnel of Natural Gasoline Companies

April 1, 1941

A

Agua Dulce Co., 2202 Alamo Natl. Bldg., San Antonio, Tex.
J. Wood Glass, *Pres.* F. C. Henderson, *V. P.* Fred C. Hall, *Sec., Sales Mgr.* and *Pur. Agt.* E. P. Henderson, *Treas.* George C. Bonecutter, *Gen. Supt. Gaso. Plants;* Z. P. Armstrong, *Supt.*, Box 1026, Robstown, Tex. Plant located in Texas. Capacity, 45,000. (L.P.G. capacity, 5,000.)

Aldon Gasoline Co., National Bank of Tulsa Bldg., Tulsa, Okla.
Hugh Ownby, *Pres.* Paul M. Raigorodsky, *V. P.* and *Sales Mgr.* Wilbur J. Holleman, *Sec.* and *Treas.* Paul Schaefer, *Gen. Supt.* and *Pur. Agt.* E. W. Burt, Haven, Kans., *Plant Supt.* Plant in Kansas. Capacity, 10.000.

Alum Rock Gas Co., 78 Mill St., Port Allegany, Pa.
C. I. Crippen, *Pres.* J. H. Isherwood, C. R. Beddows, *V. P.s.* J. D. Forsyth, *Sec.* C. R. Beddows, *Treas.* E. H. Crippen, *Gen. Supt.* Plant in Pennsylvania. Capacity, 500.

Anchor Gasoline Corp., Atlas Life Bldg., Tulsa, Okla.
B. B. Blair, *Pres.* M. E. Mockley, *V. P.* and *Gen. Supt.* Paul R. Smith, *Sec.* W. A. Baden, *Treas.* J. W. Roberts, Eola, La., *Supt.* Plant in Louisiana. Capacity, 30,000. (L.P.G. capacity, 15,000.)

Anzac Oil Corp., 410 Coleman Office Bldg., Coleman, Tex.
Monroe G. Cheney, *Pres.* W. E. Stepp, *Sec.* and *Treas.* R. E. Alsop, *Gen. Supt.* Plant in Texas. Capacity, 600.

Arab Gasoline Corp., Exchange Bldg., Eastland, Tex.
Samuel Butler, *Pres.* and *Pur. Agt.* Philip T. Sharples, *V. P.* W. E. Cox, *Sec.* and *Treas.* Franklin Dwyer, *Gen. Supt.* R. S. Railey, Eastland, Tex., *Supt.* Plant in Texas. Capacity, 25,000. (L.P.G. capacity, 6,000.)

Arkansas Fuel Oil Co., Slattery Bldg., Shreveport, La.
T. W. Tutwiler, *Pres.* D. W. Harris, *V. P.* and *Gen. Mgr.* A. F. Holliday, *V. P.* J. A. Welch, *V. P.* and *Sales Mgr.* J. S. Sheffield, *Sec.* M. J. Lasseigne, *Treas.* E. P. Farmer, *Gen. Supt. Natural Gaso. Plants.* J. Lucas, *Mgr. Purchases.* A. W. Trusty, *Ch. Chem.* H. T. Goss, *Ch. Engr.* J. A. Akeman, Rt. 2, Robinson, Ill.; D. N. Barrow, Box 147, Waskom, Tex.; R. E. Biggs, Box 127, Simsboro, La.; J. R. Britt, Box 1734, Shreveport, La.; H. F. Duckworth, Box 629, Homer, La.; D. H. Huff, Box 128, Sibley, La.; A. J. McKinnon, Box 801, Jefferson, Tex.; Fred H. Ramseur, Box 951, Longview, Tex.; J. I. Ramsey, Box 42, Haughton, La.; J. L. Shotwell, Box 71, Rodessa, La., *Plant Supts.* Plants in Illinois, Louisiana and Texas. Capacity, 205,500. (L.P.G. capacity, 30,000.)

Arkla Oil Co., 1407 Tower Petroleum Bldg., Dallas, Tex.
John J. Thomas, *Gen. Supt.* Plant located in Arkansas. Capacity, 10,000.

B

Balco Gasoline Corp., 2005 Phillower, Tulsa, Okla.
A. E. Ballin, *Pres.* Robert H. Bartlett, *V. P.* and *Treas.* D. M. Watson, *Sec.* C. B. Rose, Box 327, Okemah, Okla., *Supt.* Plant in Oklahoma. Capacity, 9,000.

Bankline Oil Co., 437 S. Hill St., Los Angeles, Calif.
H. J. Barneson, J. L. Barneson, Lionel T. Barneson, *V. P.s.* L. L. Aubert, *Gen. Mgr.* H. M. Paulsen, *Asst. Gen. Mgr.* L. F. Moore, 2603 E. Willow St., Signal Hill, *Plant Supt.* Plant in California. Capacity, 25,000. (L.P.G. capacity, 2,000.)

Barnsdall Oil Co., California Div., Petroleum Bldg., Tulsa, Okla.
William Dewey Loucks, *Chm. Bd.* E. B. Reeser *Pres.* James A. Dunn, *V. P.* and *Sec.* E. M. Skeehan, *V. P.* and *Treas.* R. A. Broomfield, *Exec. V. P.* D. L. Frawley, D. R. Snow, T. N. Law, *V. P.s.* J. C. Gilbert, 714 W. Olympia, Los Angeles, *Plant Supt.* Plant in California. Capacity, 24,000. (L.P.G. capacity, 27,200.)

Barnsdall Oil Co., Petroleum Bldg., Tulsa, Okla.
William Dewey Loucks, *Chm. Bd.* E. B. Reeser, *Pres.* James A. Dunn, *V. P.* and *Sec.* E. M. Skeehan, *V. P.* and *Treas.* R. A. Broomfield, *Exec. V. P.* D. L. Frawley, D. R. Snow, T. N. Law, *V. P.s.* Jay Weathers, *Sales Mgr.* O. E. McClatchey, *Pur. Agt.*

Abbreviations

Chm. Bd.—Chairman of Board
Pres.—President
V. P.—Vice President
Sec.—Secretary
Treas.—Treasurer
Gen. Mgr.—General Manager
Gen. Supt.—General Superintendent
Sales Mgr.—Sales Manager
Tank-Car S. M.—Tank-Car Sales Manager
Pur. Agt.—Purchasing Agent
Traf. Mgr.—Traffic Manager
Ch. Engr.—Chief Engineer
Supt.—Superintendent
Asst. Supt.—Assistant Superintendent
Ch. Chem.—Chief Chemist
L.P.G.—Liquefied petroleum gas
Capacity—Gallons per day

H. E. Baber, *Ch. Engr.* E. E. Troyer, Box 224, Avant, Okla.; J. O. Green, Box 36, Earlsboro, Okla.; D. G. Miller, Box 1687, Odessa, Tex.; R. W. Shannon, Rt. 2, Oxford, Kans.; G. R. Nicholas, Box 37, Turley, Okla., *Supts.* Plants in Oklahoma, Kansas, and Texas. Capacity, 83,000.

Bartlett Gasoline Co., 406 Natl. Bank of Tulsa Bldg., Tulsa, Okla.
David A. Bartlett, *Pres.* Dean E. Foster, *V. P.* and *Ch. Engr.* C. H. McKnight, *Sec.* and *Treas.* E. W. Melling, Butler, Okla., *Gen. Supt.* Plant located in Oklahoma. Capacity, 16,000.

Bayliss & Bayliss, Titusville, Pa.
Plant located in Pennsylvania. Capacity, 10,000.

Bell Oil & Gas Co., Natl. Bank of Tulsa Bldg., Tulsa, Okla.
Samuel L. Lubell, *Pres.* Benedict I. Lubell, *V. P.* and *Treas.* Dr. I. Arthur Anson, *V. P.* M. L. Freese *V. P.* and *Sales Mgr.* Benjamin P. Piepgrass, *Sec.* E. S. Horner, *Gen. Supt. Gaso. Plants.* Louis Mack, *Ch. Engr.* J. H. Naron, *Pur. Agt.* E. S. Horner (Ben Franklin Ref. Co.), Ardmore, Okla.; B. F. Gilchrist, Burkburnett, Tex.; A. M. Moore, Grandfield, Okla., *Supts.* Plants in Oklahoma and Texas. Capacity, 15,000.

Belridge Oil Co., 815 Edison Bldg., Los Angeles, Calif.
Burton E. Green, *Pres.* F. B. Sutton, *V. P.* and *Sec.* H. L. Westbrook, *V. P.* and *Treas.* F. H. Buck, L. O. Hopkins, *V. P.s.* C. E. Coleston, *Field Mgr.* Hudson C. Drake, *Pur. Agt.* C. H. Peter, J. P. Ioppini, McKittrick; F. E. Amburn, Taft, *Supts.* Plants in California. Capacity, 145,000. (L.P.G. capacity, 40,000.)

Big Lake Oil Co., 223 Fourth Ave., Pittsburgh, Pa.
J. C. Trees, *Pres.* W. S. Hallanan, *Exec. V. P.* C. E. Beyer, *V. P.* and *Gen. Mgr.* A. B. Dally, Jr., *V. P.* W. E. Huston, *Sec.* and *Treas.* C. C. Hickle, *Gen. Supt. Gaso. Plant.* R. E. Johnson, *Pur. Agt.* J. C. Moore, *Ch. Chem.* J. F. Sutton, *Ch. Engr.* C. C. Hickle, Texon, Tex., *Supt.* Plant in Texas. Capacity, 50,000.

Blue Creek Oil & Gas Co., 207 Security Bldg., Charleston, W. Va.
George E. Thomas, *Pres.* D. T. McClure, *V. P.* G. E. Tribble, *Sec.* and *Treas.* G. W. McCamey, *Gen. Supt.* Plant in West Virginia. Capacity, 3,500.

Brea Canon Oil Co., 605 W. Olympic Blvd., Los Angeles, Calif.
Plant located in California. Capacity, 14,000.

Breneman & MacDonell, 922 Natl. Bank Bldg., Lima, Ohio
E. R. Perfect, Box 337, Oblong, Ill., *Supt.* Plants in Illinois. Capacity, 1,600.

Buckeye Natural Gasoline Corp., Grant Bldg., Pittsburgh, Pa.
A. E. Walker, *Pres.* A. V. B. Candler, *V. P.* A. W. Clark, *Asst. V. P.* Robert W. Eiler, *Sec.* Charles A. Meyer, *Treas.* E. C. Smith, *Gen. Supt.* N. E. Allen, *Pur. Agt.* Earle M. Hughes, *Ch. Chem.* O. D. Haradaway, *Ch. Chem.* Plant in Texas. Capacity, 15,000. (L.P.G. capacity, 1,500.)

B-W Gasoline Co., Livingston, Tex.
Lyle West and J. O. Bergman, *partners.* Plant in Texas. Capacity, 4,000. (L.P.G. capacity, 2,000.)

C

Cabot Carbon Co., 77 Franklin St., Boston, Mass.
Godfrey L. Cabot, *Pres.* Ralph Bradley, Russell G. Allen, Edmund Billings, *V. P.s.* Fred C. Fernald, *Sec.* Thomas D. Cabot, *Treas.* Francis M. Neely, *Gen. Supt. Natural Gaso. Plants.* Shelton H. Cruncleton, Kermit; John F. Moore, Wickett, *Supts.* Plants in Texas. Capacity, 90,000. (L.P.G. capacity, 5,000.)

Canadian River Gas Co., Colorado Springs, Colo.
N. K. Moody, Tulsa, *Pres.* P. C. Spencer, New York; Albert R. Jones, Kansas City; R. E. Wertz, Amarillo, *V. P.s.* George Baird, New York, *Sec.* and *Treas.* J. O. Shields, *Asst. Treas.* L. B. Whitefield, *Pur. Agt.* G. F. Brunston, *Ch. Engr.* Robert W. Hendee, *Gen. Mgr.* R. A. Ford, Amarillo, *Gen. Supt.* J. H. Hallenberger, *Ch. Chem.;* L. W. Jackson, *Supt.*, Channing, Tex. Plant in Texas. Capacity, 30,000.

Cannon Gasoline Co., Box 966, Amarillo, Tex.
J. J. Hastings, *Pres.* and *Ch. Engr.* F. J. Storm, *V. P.* and *Treas.* J. B. Dooley, *Sec.* Plant in Texas. Capacity, 6,000. (L.P.G. capacity, 1,000.)

Carbide & Carbon Chemicals Corp., 30 East 42nd St., New York, N. Y.
J. A. Rafferty, *Pres.* G. O. Curme, Jr., H. E. Thompson, J. G. Davidson, J. W. McLaughlin, R. W White, *V. P.s.* A. C. Cornell, *Sec.* P. F. Smith, *Treas.* R. K. Turner, *Gen. Supt. Gaso. Plants.* W. F. Reich, Jr., *Sales Mgr.* W. F. Ackerman, *Pur. Agt.* G. V. Scofield, *Ch. Chem.* C. S. Dunn, *Ch. Engr.* C. S. Stuter, Hastings; F. W. Hineline, Diamond, *Supts.* Plants in West Virginia. Capacity, 5,000

Carnegie Natural Gas Co., 962 Frick Annex, Pittsburgh, Pa.
S. W. Meals, *Pres.* J. W. Hamilton, *Sec.* H. T. Hamilton, *Treas.* H. J. Hess, *Gen. Supt.* Plants in Pennsylvania and West Virginia. Capacity, 10,400.

Carpenter, M. A., Karns City, Pa.
Plant in Pennsylvania. Capacity, 200.

Carter Oil Co., Natl. Bank of Tulsa Bldg., Tulsa, Okla.
L. F. McCollum, *Pres.* O. C. Schorp, *V. P.* L. G. Owen, *Gen. Counsel.* F. M. Darrough, *Sec.* W. M. Barnhill, *Asst. Treas.* R. L. Clifton, *Gen. Supt. Gaso Plants.* H. F. Miller, *Sales.* J. R. Freeman, *Pur. Agt.* S. F. Mauney, Jr., *Ch. Chem.* I. S. Salnikov, *Ch. Engr.* W. T. Mills, Rt. 2, Stonewall, Okla.; C. J. Randles, Box 1151, Seminole, Okla.; William Brown, Box 43, St. Elmo, Ill., *Supts.* Plants located in Oklahoma, Arkansas, Louisiana, and Illinois. Capacity, 152,000. (L.P.G. capacity, 40,000.)

Central States Production Corp., Oklahoma Bldg., Tulsa, Okla.
Paul K. Sticelber, *Pres.* A. H. Burgess, Henryetta, Okla., *Supt.* Plant in Oklahoma. Leased and operated by Otha H. Grimes. Capacity, 2,800.

Cimarron Gasoline Co., Coyle, Okla.
O. G. Stokely, *Pres.* R. L. McDonald, *V. P.* and *Gen. Mgr.* Plant in Oklahoma. Capacity, 10,000.

Cities Service Oil Co., Bartlesville, Okla.
H. R. Straight, *Pres.* and *Gen. Mgr.* A. W. Ambrose, H. D. Frueauff, C. E. Murray, W. H. Merritt, *V. P.s.* C. E. Murray, *Sec.* L. A. Lynd, *Asst. Treas.* H. A Ells, *Mgr. Gaso. Div.* R. W. Johnston, *Gen. Supt. Natural Gaso. Plants.* S. B. Brooks, *Sales Mgr.* Harris Bateman, *Pur. Agt.* Dick Rodgers, Box 2093, Wichita, Kans.; C. F. Fischer, Box 270, Seminole, Okla., *Dist. Supts.* L. A. Webster, Box 498, Burrton, Kans.; W. H. Tillock, Rt. 1, Burrton, Kans.; D. G. Thoes, Box 2093, Wichita, Kans.; W. H. Yingling, Arkansas City, Kans.; L. L. Grubb, Tallant, Okla; R. L. Poteet, Box 190, Seminole, Okla.; V. F. Hobart, Box 270, Seminole, Okla.; J. A. Dowler, Drawer T Konawa, Okla.; C. E. Powell, Box 543, Asher, Okla.; G. B. Wooster, Box 1460, Wewoka, Okla.; J. F Hodge, Box 30, Sasakwa, Okla.; J. L. Sperry, Box 1742, Pampa, Tex.; I. L. Fletcher, Star Rt., Odessa, Tex., *Supts.* Plants in Oklahoma, Kansas and Texas. Capacity, 322,500.

Clinger Oil & Gas Co., Tidioute, Pa.
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Clymore Co., Inc., 1204 Alamo Natl. Bldg., San Antonio, Tex.

Garland Clymore, *Pres.* R. S. Wyrick, Refugio, Tex., *V. P.* B. S. Fenlaw, *Sec.* R. C. Willett, *Treas.* R. S Wyrick, *Gen. Supt.;* V. A. Goss, *Ch. Chem.*, Refugio, Tex. Plant in Texas. Capacity, 4,000 (L.P.G. capacity, 4,000.)

Cochran, John G., & Co., 676 W. Main, Sheffield, Pa.

John G. Cochran, *Mgr.* J. C. Curtin, *Supt.* Plant in Pennsylvania. Capacity, 1,100.

Coline Gasoline Corp., 560 South Main, Los Angeles, Calif.

J. H. Keefe, *Pres.* F. C. Ripley, *V. P.* H. Lankhut, *Sec.* and *Treas.* H. E. Moulton, *Gen. Supt.* J. R. Burns, *Pur. Agt.* F. E. Bradley, *Ch. Chem.* J. L. Black. Box 411, Ventura; D. R. Van Gorder, Box 177, Torrance, *Plant Supts.* Plants in California. Capacity, 42,000. (L.P.G. capacity, 7,000.)

Coltexo Corp., 41 E. Forty-second St., New York, N. Y.

Reid L. Carr, *Pres.* George L. Bubb, *V. P.* and *Treas.* W. D. Ahearn, *Sec.* W. H. Anders, *Sales Mgr.* H. J. Hunter, *Ch. Chem.* W. M. Greenwell, *Ch. Engr.* F. M. Cox, Rodessa, La.; C. C. Mullins, Lefors, Tex., *Plant Supts.* Plants in Texas and Louisiana. Capacity, 80,000.

Columbian Gasoline Corp., 41 E. Forty-second St., New York, N. Y.

Reid L. Carr, *Pres.* George L. Bubb, *V. P.* and *Treas.* W. D. Ahearn, *Sec.* W. H. Anders, *Sales Mgr.* H. J. Hunter, *Ch. Chem.* W. M. Greenwell, *Ch. Engr.* E. D. Nolan, Shamrock, Tex., *Plant Supt.* Plant in Texas. Capacity, 10,000.

Consolidated Gasoline Co., Cisco, Tex.

A. S. Hickok, *Pres.* C. F. Eisenhour, *Sec.* and *Treas.* R. L. Ponsler, *Gen. Supt.* E. N. Francis, *Ch. Chem.* Lon Horn, *Ch. Engr.* and *Plant Supt.*, Eastland, Tex. Plant in Texas. Capacity, 10,000.

Continental Oil Co., Ponca City, Okla.

Dan Moran, *Pres.* G. F. Smith, *V. P.* and *Treas.* W. W. Bruce, R. E. Collom, J. G. Dyer, W. H. Ferguson, Harry J. Kennedy, Walter Miller, *V. P.s.* J. J. Cosgrove, *Sec.* R. A. Carter, *Gen. Supt. Natural Gaso. Plants.* O. B. Lloyd, *Gen. Sales Mgr.* G. W. Evans, *Gen. Pur. Agt.* B. H. Lincoln, *Ch. Chem.* M. E. Clawson, *Ch. Engr.* Gill Boatman, Box J, Billings, Okla.; D. M. Brown, Box 352, Electra, Tex.; A. E. Crouse, Box 96, Basile, La.; P. F. Elmore, Box 221, Ville Platte, La.; C. R. Freel, Box 96, Basile, La.; J. N. Garritson, Box A, Hobbs, N. M.; R. G. Kennelly, Lance Creek, Wyo.; R. A. Noah, O. M. Read, Box 352, Electra, Tex.; J. E. Storts, Box 812, Lake Charles, La., *Plant Supts.* Plants located in Oklahoma, Texas, Louisiana, New Mexico and Louisiana. Capacity, 245,000. (L.P.G. capacity, 125,000.)

Cook Oil Lease, Kelletville, Pa.

James E. Flynn, *Sec.* Lee Dunkle, Mayburg, Pa., *Gen. Supt.* F. R. Klinestiver, *Sales Mgr.* and *Pur. Agt.* Perry Howard, Mayburg, *Ch. Engr.* Plant in Pennsylvania. Capacity, 130.

Cosden Petroleum Corp., Box 1311, Big Spring, Tex.

R. L. Tollett, *Pres.* and *Gen. Mgr.* M. C. Zaidenberg, *V. P.* A. V. Karcher, *Sec.* and *Treas.* W. E. Gibson, *Sales Mgr.* George Grimes, Graham, Tex., *Supt.* Harold F. Bottomley, *Ch. Chem.* Harry A. Brown, *Ch. Engr.* Otto Peters, *Pur. Agt.* Plant located in Texas. Capacity, 5,000.

Cowan Oil & Refining Co., 215 West Seventh St., Los Angeles, Calif.

John A. Arnold, *Pres.* Arnold Holden, *V. P.* W. G. Howard, *Sec.* and *Treas.* Plants in California. Capacity, 20,000.

Crawford & Gregory, Emlenton, Pa.

H. J. Crawford and T. P. Gregory, *Owners.* L. L. Henry, Parker, Pa., *Supt.* Plant in Pennsylvania. Capacity, 500. (L.P.G. capacity, 200.)

Crosbie, J. E., Inc., 1810 Natl. Bank of Tulsa Bldg., Tulsa, Okla.

W. B. Moran, *Pres.* C. H. Sweet, *V. P.* and *Treas.* M. E. Church, *Sec.* J. D. Freeman, *Pur. Agt.* D. B. Young, Fittstown, *Supt.* Plant in Oklahoma. Capacity, 28,000. (L.P.G. capacity, 7,000.)

D

Danciger Oil & Refineries, Inc., Waggoner Bldg., Fort Worth, Tex.

Dan Danciger, *Pres.* Joseph Danciger, *V. P.* and *Treas.* Jack Danciger, A. Danciger, *V. P.s.* J. E. Vaeth, *Sec.* G. W. Hesse, Box 278, Lefors; Guy Barritt, Danciger, *Supts.* Plants in Texas. Capacity, 60,000.

Deep Oil Development Co., 201 City Natl. Bank Bldg., Wichita Falls, Tex.

J. T. Harrell, *Pres.* John W. Thomas, *V. P.* John C. Coffey, *Sec.* and *Treas.* L. F. Cox, *Gen. Supt. Gaso. Plants.* W. G. Palmer, *Ch. Engr.* O. H. Stanbrough, Box 39, Kamay, Tex., A. S. Lavender, Box 701, Archer City, Tex., *Supts.* Plants in Texas Capacity, 8,500. (L.P.G. capacity, 2,850.)

Deep Rock Oil Corp., Atlas Life Bldg., Tulsa, Okla.

R. K. Huey, *Gen. Supt.* B. L. Majewski, *Sales Mgr.* B. C. Frichot, *Ch. Chem.;* R. B. Davis, *Ch. Engr.*, Cushing. R. G. Martin, Tulsa, *Pur. Agt.* Plant located in Oklahoma. Capacity, 1,000.

Del Rey Oil & Gas Co., Washington St. and Beach Ave., Venice, Calif.

P. M. Pike, *Pres.* F. A. E. Lowell, *V. P.* and *Gen. Supt.* A. E. Schiltz, *Sec.* H. A. Wohlenberg, *Asst. Sec.* Plant in California. Capacity, 30,000.

Del Rey Petroleum Co., 415 Esperson Bldg., Houston, Tex.

R. R. Dean, *Pres.* H. S. Medlin, *Sec.* and *Treas.* L. E. Cooper, Box 55, Hardin, *Supt.* Lyman Helvenston, *Ch. Chem.* Plant in Texas. Capacity, 10,000. (L.P.G. capacity, 2,000.)

Del Valle Gasoline Co., 811 West Seventh St., Los Angeles, Calif.

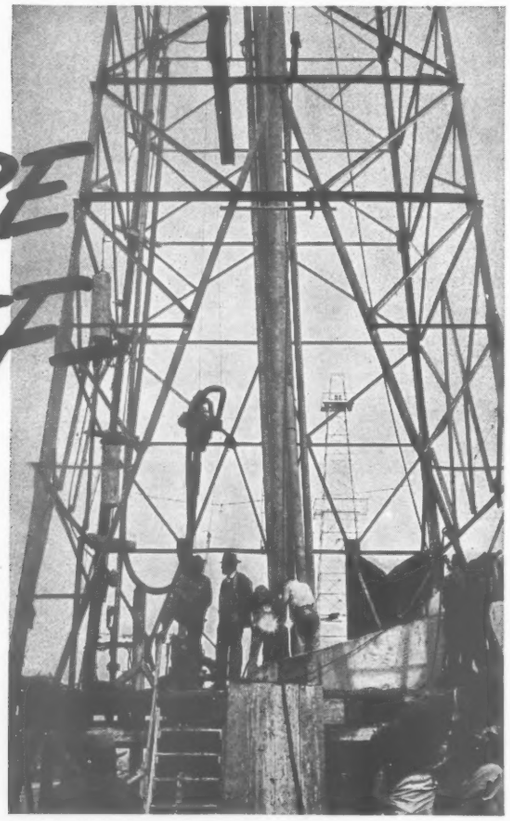
R. E. Bering, *Pres.* H. W. Parmalee, *Supt.* Plant in California. Capacity, 15,000.

Dempseytown Gas Co., 78 Mill St., Port Allegany, Pa.

C. I. Crippen, *Pres.* J. H. Isherwood, *V. P.* C. R. Beddows, *V. P.* and *Treas.* James C. Forsyth, *Sec.* Roy Klingler, Knox, Pa., *Supt.* Plant in Pennsylvania. Capacity, 1,000.

Desdemona Gasoline Co. of Texas, 504 Capps Bldg., Fort Worth, Tex.

W. F. MacDermott, *Pres.* and *Treas.* Floyd Evans, *V. P.* M. B. Todd, *Sec.* D. H. Moss, Desdemona, Tex., *Gen. Supt.* Plant located in Texas. Capacity, 3,000.



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to another fast run!

Time after time ARMCO Slip-Joint Casing has set records for speed and economy in the oil fields. Here's another example:

It cost but 4 cents a pipe-foot to weld 10¾-inch OD, 3 gage ARMCO *Casing on three Oklahoma wells. Welding time was 6½ minutes a joint with two welders laying two beads to the weld. An average of 9 minutes was the total time for picking up a 40-foot section, stabbing, welding and lowering into the hole.*

This experience is typical of what you could do with ARMCO Casing. It is strong yet light in weight and easy to handle. Ends line-up quickly in the slip-joint collars without using clamps. Slips and elevators fit the pipe, special equipment is out. Any seasoned field welder can make a strong, uniform joint.

There is a diameter and wall thickness of ARMCO Slip-Joint Casing to exactly fit your job — no need to pay for excess weight. Immediate delivery can be made in the Mid-Continent area and Illinois from distributor stocks. Just get in touch with the nearest branch, or write The American Rolling Mill Company, Pipe Sales Division, 1401 Curtis St., Middletown, Ohio; 501 Mayo Bldg., Tulsa, Oklahoma; 3500 Maury St., Houston, Texas.

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Distributed By: THE NATIONAL TANK CO., TULSA, OKLA. And BRANCHES

Devonian Oil Co., 1705 Natl. Bank of Tulsa Bldg., Tulsa, Okla.
L. C. Ritts, *Pres.* E. S. Calvert, *V. P.* and *Gen. Supt. Gaso Plant.* George D. Foster, *Sec.* H. R. Dean, *Treas.* and *Pur. Agt.* W. A. Fosburgh, Box 106, Kellyville, Okla., *Supt.* Plant in Oklahoma. Capacity, 20,000.

Dinsmoor & Co., 702 Second St., St. Marys, W. Va.
W. P. Kerwood, Jr., *Pres.* F. K. Sellers, *V. P.* Denton Dinsmoor, *Sec.* M. B. Dinsmoor, *Treas.* D. H. Israel, *Gen. Supt.* J. Fred Kelley, C. E. Bills, Rt. 3, St. Marys; E. L. Bailey, Hebron; Clifford Haddox, Rt. 2; C. W. Casey, Rt. 1, St. Marys Plants in West Virginia. Capacity, 500.

Dun Mar Oil & Gas Co., Route 3, Fairview, W. Va.
Plant in West Virginia. Capacity, 400.

Duval Gasoline Co., 806 Second Natl. Bank Bldg., Houston, Tex.
D. W. Hovey, *Pres.* Paul G. Benedum, *V. P.* E. L. Sauer, *Sec.* and *Treas.* D. S. Wallace, Benavides, Tex., *Plant Supt.* Plant in Texas. Capacity, 20,000

E

Eason Oil Co., Bass Bldg., Enid, Okla.
T. T. Eason, *Pres.* L. D. Hinman, *V. P.* T. W. Eason, *Sec.* and *Treas.* B. T. Weidner, Crescent, *Gen. Supt.* R. H. Rowland, *Sales Mgr.* A. C. Hatton, *Pur. Agt.* G. B. Lyon, *Ch. Chem.* L. H. Snapp, Garber, *Supt.* Plants in Oklahoma. Capacity, 22,000. (L.P.G. capacity, 5,000.)

East Texas Refining Co., 1405 Tower Petroleum Bldg., Dallas, Tex.
W. G. Skelly, *Pres.;* C. C. Herndon, L. F. Brothers, *V. P.s,* Tulsa. F. T. Hopp, *Sec.* and *Treas.* John J. Thomas, Longview, *Gen. Supt. Natural Gaso. Plants.* John J. Thomas. *Ch. Engr.* Plant in Louisiana. Capacity, 5,000.

Edwards, Eddie O., R.F.D. 2, Titusville, Pa.
Plant in Pennsylvania. Capacity, 170.

Ellenberger & Sons, Wm. J., R.F.D. 1, Karns City, Pa.
Plant in Pennsylvania. Capacity, 300.

Elliott Bros., R.F.D. 2, Chicora, Pa.
Plant in Pennsylvania. Capacity, 500.

El Paso Natural Gas Co., Bassett Tower, El Paso, Tex.
Paul Kayser, *Pres.* C. C. Cragin, A. L. Forbes, Jr., *V. P.s.* J. E. Franey, *Sec.* and *Treas.* L. A. Beaird, *Gen. Supt.* H. A. Jones, *Pur. Agt.* W. L. Smith, *Ch. Chem.* J. F. Eichelmann, *Ch. Engr.* Plants in New Mexico. Capacity, 125,000. (L.P.G. capacity, 40,000.)

Equitable Gas Co., 435 Sixth Ave., Pittsburgh, Pa.
F. R. Phillips, *Pres.* P. H. McCance, Sr., *V. P.* F. F. Schauer, *V. P.* and *Gen. Mgr.* Joseph McKinley, *V. P. chg. Sales.* H. D. Megahan, *Treas.* Judson Bonsall, *Supt. Compressing Stations.* C. W. Lepper, *Pur. Agt.* F. B. Saunders, *Controller.* George M. Myers, Rogersville, Pa.; P. E. Jackson, Rt. 1, Clarksville, Pa., *Plant Supts.* Plants in Pennsylvania. Capacity, 12,000.

F

Falling Rock Cannel Coal Co., Weir, W. Va.
Plant in West Virginia. Capacity, 3,000.

Field, O. C., Gasoline Corp., 944 Wilshire Blvd., Los Angeles, Calif.
O. C. Field, *Pres.* W. G. Metson, J. C. Burke, *V. P.s.* Newton J. Hale, *Sec.* and *Treas.* A. L. Henrickson, Box 30, Huntington Beach; D. A. Cushman, Rt. 1, Montebello, *Supts.* Plants in California. Capacity, 100,000. (L.P.G. capacity, 8,000.)

Fleming, J. E., 623 N. Perry, Titusville, Pa.
J. E. Fleming, *Owner.* George Miller, C. W. Nobles, Grand Valley, Pa., *Supts.* Plant in Pennsylvania. Capacity, 100.

Frame Natural Gasoline Co., 1539 South Yorktown St., Tulsa, Okla.
Plants in Oklahoma. Capacity, 4,800.

G

General American Oil Co. of Texas, Republic Bank Bldg., Dallas, Tex.
J. W. Gilliland, *Pres.* A. H. Meadows, *V. P.* and *Sec.* M. E. Wilson, *V. P.* and *Treas.* D. V. Loflin, *Gen. Supt.* J. D. Brown, *Pur. Agt.* Plant located in Texas Capacity, 20,000.

General Petroleum Corp. of California, 108 W. Second St., Los Angeles, Calif.
S. J. Dickey, *Pres.* R. A. Sperry, A. H. DeFriest, E. L. Adams, B. E. Parsons, *V. P.s.* D. W. Woods, *Sec.* W. Cunningham, *Treas.* R. C. Wheeler, *Mgr. Gas Dept.* A. H. DeFriest, *Dir. of Mktg.* G. F. Olsen, *Mgr. Laboratories.* E. W. Beck, *Pur. Agt.* V. F. Grace, *Mgr. Engr. Dept.* P. S. Magruder, 2525 E. 37th St., Vernon, Calif., *Plant Supt.* Plants in California. Capacity, 215,000.

Gilmore-Dabney, Inc., 2423 East 28th St., Los Angeles, Calif.
E. B. Gilmore, *Pres.* Milton H. Philleo, *V. P.* C. S. Beesemyer, *Sec.* and *Treas.* H. L. Eggleston, *Gen. Supt.* J. L. Coates, *Sales Mgr.* Mark Payne, *Pur. Agt.* R. H. Pierson, *Ch. Chem.* William Shellshear Long Beach, *Plant Supt.* Plant in California. Capacity, 30,000.

Glacier Production Co., 40 E. Broadway, Butte, Mont.
F. W. Bird, *Pres.* M. E. Buck, *V. P.* S. P. Hogan, *Sec.* J. R. Thomas, *Treas.* R. D. Smith, *Gen. Supt.* C. D. Warner, *Sales Mgr.* W. T. Jackson, *Pur. Agt.* Dean Humphries, *Ch. Chem.* H. H. Cochrane, *Ch. Engr.* E. M. Parkin, Cut Bank, *Plant Supt.* Plant in Montana. Capacity, 7,000. (L.P.G. capacity, 5,000.)

Glen Rose Gasoline Co., 311 Natl. Bank of Tulsa Bldg., Tulsa, Okla.
M. H. Marr, *Pres.* Paul M. Raigorodsky, *V. P.* and *Sales Mgr.* R. A. Bristol, *Sec.* and *Treas.* James Sorrel, *Ch. Chem.* Paul Schaefer, Box 2, Rodessa, *Supt.* Plant in Louisiana. Capacity, 35,000. (L.P.G. capacity, 5,000.)

Great National Oil Corp. of La., 818 Commercial Natl. Bank Bldg., Shreveport, La.
J. T. Means, Jr., *Pres.* W. C. Feazel, *V. P.* G. M. Anderson, *Sec.* and *Treas.* K. E. Jones, Jesse White, Ida, La., *Supts.* Plant in Louisiana. Capacity, 25,000.

Gregg-Tex Gasoline Corp., 401 Glover-Crim Bldg., Longview, Tex.
Clark Sample, *Pres.* and *Treas.* Charles Cobb, Jr., *V. P.* W. Bruner Smith, *Sec.* C. E. Wharton, *Gen. Supt.* M. M. Bason, *Ch. Chem.* J. R. Epperson, *Ch. Engr.* H. J. DeLatin, *Supt.* Plant in Texas. Capacity, 100,000. (L.P.G. capacity, 60,000.)

Grimes, Charles W., and Otha H., 902 Kennedy Bldg., Tulsa, Okla.
Charles W. Grimes, *Pres.* Otha H. Grimes, *Gen. Supt.* W. O. Kinsey, Box 533, Okemah; Joe Gibson, Weleetka, *Plant Supts.* Plants in Oklahoma. Capacity, 10,500. (L.P.G. capacity, 1,000.)

(Continued on Page 82)

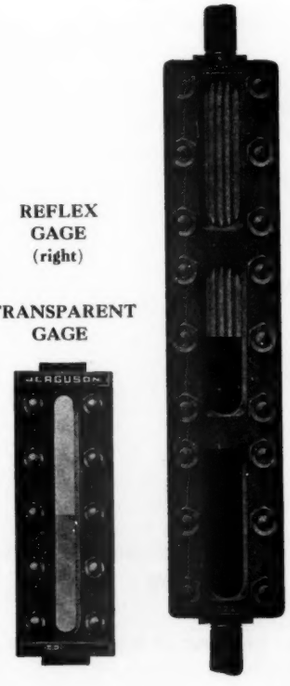
JERGUSON

The Safety-Plus Gages

HIGH QUALITY GLASS

AMPLE, STRONG METAL

LEAKPROOF ASSEMBLY



REFLEX GAGE (right)

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The safety of refinery operations is measured by the safety factor of equipment — yes, including even gages. Operators want not only clear visibility and instant readability in their gages but assurance that glass and metal will withstand the higher pressure and temperatures . . . that leaks will not develop.

These requirements are met 100% in Jerguson Gages. A trial order will convince you.

Send for catalogue.

JERGUSON GAGE & VALVE CO.

85 FELLSWAY, SOMERVILLE, MASS.

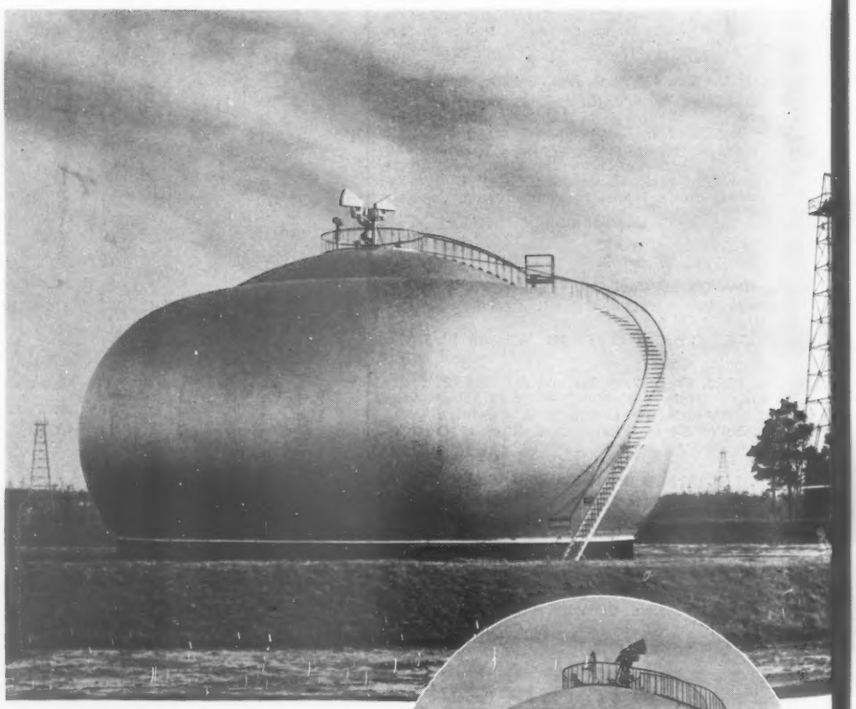
A proved method for PROTECTING Natural gasoline *Quality...*

USE

NATURAL gasoline is playing an increasingly important part in helping to fill the demand for blending material used in producing aviation gasoline, as well as high test motor fuel for the more than thirty million cars, trucks and buses now operating in this country.

The illustrations on these pages represent a typical cross-section of the large number of Hortonspheroids now being used by the manufacturers of natural gasoline to obtain efficient pressure storage at low cost. By using spheroids to reduce evaporation losses and resultant deterioration, these operators are making sure that their natural gasoline will be of consistantly high quality, from the time it is manufactured to the time it is used.

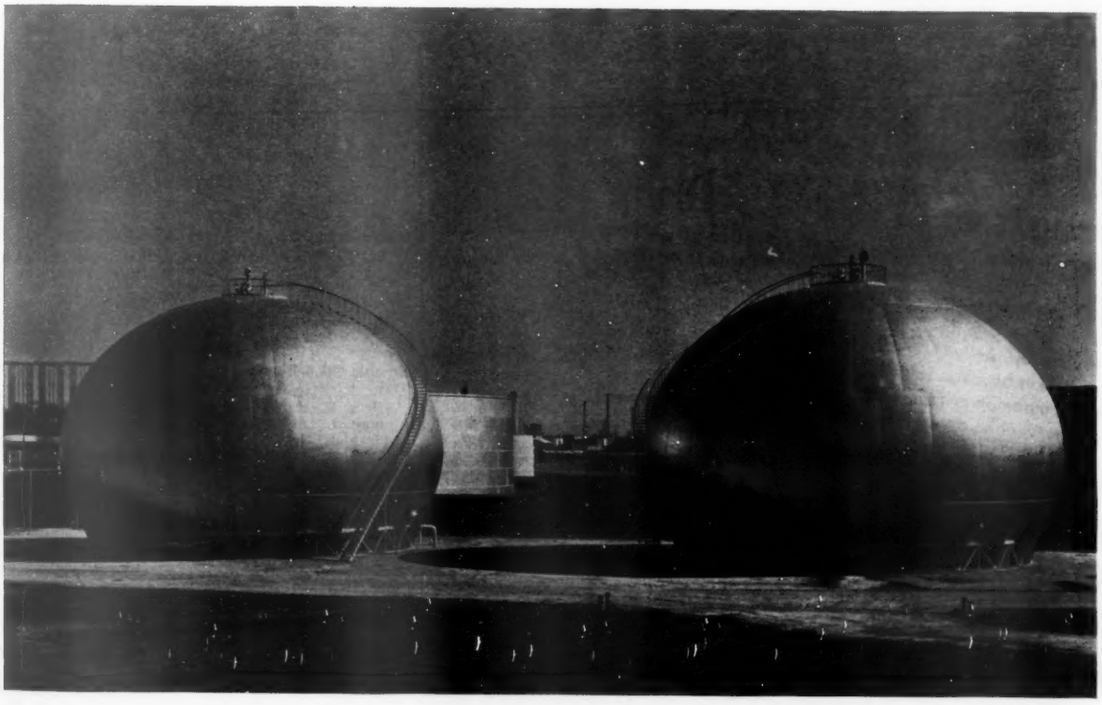
Hortonspheroids are not just furnished as *special,* "custom-built" units, but are available in a wide range of standard sizes to meet practically every pressure storage problem. Write for complete information.



WARREN PETROLEUM CORP. — *(Left):* One of two 20,000-bbl. Hortonspheroids used to store natural gasoline at the Corpus Christi, Tex., terminal.

BARNSDALL OIL CO. — *(Right):* 10,000-bbl. spheroid storing natural gasoline at the Bareco Oil Co. plant, Corpus Christi.

HORTONSPHEROIDS



HANLON-BUCHANAN INC. — (*Above*): Two 7,500-bbl. and one 20,000-bbl. Hortonspheroids used for natural gasoline storage at Texas City, Tex. All three units operate at 15 lbs. per sq. in. pressure.

SINCLAIR-PRAIRIE OIL CO. — (*Far Left*): 40,000-bbl. spheroid used for natural gasoline storage at Arp, Tex., from where it is shipped to the company's Houston refinery.

RICHFIELD OIL CORP. — (*Immediate Left*): Two 30,000-bbl. spheroids storing natural gasoline having Reid vapor pressure of 18-22 lbs., located at Wilmington, Cal.

CHICAGO BRIDGE & IRON COMPANY

Fabricating Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PA.

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HOUSTON.....918 Richmond Avenue
TULSA.....1608 Hunt Building
BIRMINGHAM.....1536 N. Fiftieth Street
CHICAGO.....2128 McCormick Building
DETROIT.....1514 Lafayette Building
CLEVELAND...2204 Builder's Exchange Bldg.
NEW YORK.....3347-165 Broadway Building
PHILADELPHIA.1615-1700 Walnut St. Building
BOSTON.....1517 Consolidated Gas Building
SAN FRANCISCO.....1054 Rialto Building
LOS ANGELES.....1423 Wm. Fox Building

LICENSEES: Horton Steel Works, Limited, Fort Erie, Ontario, Canada; The Motherwell Bridge & Engineering Co., Ltd., Motherwell, Scotland; The Whessoe Foundry & Engineering Co., Ltd., London, England; Worms & Cie., Paris, France; Compagnia Tecnica Industrie Petroli S.A.I., Rome, Italy.

Grimes, Otha H., 902 Kennedy Bldg., Tulsa, Okla.
Otha H. Grimes, *Owner*. R. F. Chisolm. Box 231. Mount Pleasant, Mich., *Gen. Supt*. R. H. Beattie. Mount Pleasant; T. L. Fleming, Box 125, Temple, Mich.; Ray Murphy, Box 185, Wetumka, Okla.. *Plant Supts*. Plants in Michigan. Capacity, 25,000. (L.P.G. capacity, 1,000.)

Grimes, Otha H., and Roy O'Neal, Kennedy Bldg., Tulsa, Okla.
A. L. Cash, *Gen. Supt*. Otha H. Grimes, *Sales Mgr*. Roy O'Neal, *Pur. Agt*. and *Ch. Engr*. Plant in Oklahoma. Capacity, 4,720.

Gulf Oil Corp., First Natl. Bank Bldg., Tulsa, Okla.
Rush Greenslade, *V. P*. D. B. Catterlin, *Asst. Sec*. C. B. Clothier, *Asst. Treas*. S. G. Sanderson, *Gen. Supt*. H. F. Brindell, *Supt. Gaso Plants*. V. C. Fuller. Pur. Agt. Plants in Oklahoma. Capacity, 67,500. (L.P.G. capacity, 8,000.)

Gulf Refining Co., Box 1166, Pittsburgh, Pa.
J. F. Drake, *Pres*. H. A. Gidney, *V. P*. David Proctor. *Sec*. J. E. Nelson, *Treas*. Donald G. Clark, *Dir. of Pur*. Plants in Arkansas, Louisiana and Texas. Capacity, 72,500.

H

Hapgood, Roswell T., & Co., 403 Knight Bldg., Charleston, W. Va.
Roswell T. Hapgood. B. F. Cohen, James Kay Thomas, John H. Thomas, Frederick Barkus. *Partners*. G. E. Tribble, *Treas*. and *Gen. Mgr*. Wiley Price, *Ch. Engr*. Plant in West Virginia. Capacity, 6,500.

Hagy, Harrington & Marsh, Amarillo Bldg., Amarillo, Tex.
L. R. Hagy, D. D. Harrington, Stanley Marsh. *firm partners*. Earl Nutter, *Gen. Supt*. J. P. Weatherall, Rt. 2, White Deer, Tex., *Plant Supt*. Plant in Texas. Capacity, 50,000. (L.P.G. capacity, 25,000.)

Hamman Exploration Co., 2131 San Felipe Road, Houston, Tex.
John Hamman, *Pres*. John Hamman, Jr., George F. Hamman, *V. P.s* and *Gen. Supts*. Mrs. Frances Hamman, *Sec*. and *Treas*. Roy W. Machen, Box 1308, Bay City, *Supt*. Plant located in Texas. Capacity, 12,000. (L.P.G. capacity, 2,000.)

Hanlon Gasoline Co., 718 Natl. Bank of Tulsa Bldg., Tulsa, Okla.
E. I. Hanlon, *Pres*. D. E. Buchanan, *V. P*. J. H. Boyle, *V. P., Sec*. and *Treas*. C. E. Wharton, *Gen. Supt*. George Webber, *Ch. Chem*. A. A. Hardee. Breckenridge, *Supt*. Plant in Texas. Capacity, 150,000.

Hanlon Gasoline Corp. of Texas, Natl. Bank of Tulsa Bldg., Tulsa, Okla.
J. H. Boyle, *Pres*. and *Sec*. D. E. Buchanan, *V. P*. and *Treas*. C. E. Wharton, Box 538, Gladewater, Tex., *Gen. Supt*. Ray E. Miller, *Sales Mgr*. C. E. Benham, *Ch. Chem*. Plant in Texas. Capacity, 150,000.

Harvey, John J., Estate, Pleasantville, Pa.
Plant in Pennsylvania. Capacity, 500.

Haskell, Roth & Bayliss, Titusville, Pa.
George E. Bayliss, *Supt*. Plant in Pennsylvania. Capacity, 10,000.

Henaghan & Hanlon, Inc., Box 147, Sistersville, W. Va.
E. I. Hanlon, *Pres*. T. C. May, *Sec*. M. P. Sexton, *Gen. Supts*. Plants in West Virginia. Capacity, 12,000.

Henderson, F. C., and E. P., 2202 Alamo Natl. Bldg., San Antonio, Tex.
F. C. Henderson, *Pres*. J. Wood Glass, *V. P*. Fred C. Hall, *Sec*. E. P. Henderson, *Treas*. A. A. Eason, *Auditor*. Milton Cox, *Mgr. Gas. Dept*. C. A. Seiple, *Plant Supt.;* W. R. Sever, *Field Supt*., Box 106, Sanford, Tex. Plant in Texas. Capacity, 60,000. (L.P.G. capacity, 5,000.)

Hercules Gasoline Co., Inc., St. Vincent Ave., Shreveport, La.
E. R. Ratcliff, *Pres*. J. Pat Beaird, *V. P*. Melvin Johnson, *Sec*. H. D. McLean, *Gen. Supt*. Max Doworkin, *Ch. Chem*. J. A. Powell, *Ch. Engr*. Plant in Texas. Capacity, 50,000. (L.P.G. capacity, 35,000.)

Hickey & Russell, Clarendon, Pa.
Plant in Pennsylvania. Capacity, 300.

Honolulu Oil Corp., 215 Market St., San Francisco, Calif.
A. C. Mattei, *Pres*. L. A. Cranson, A. P. Welch, P. F. Brown, *V. P.s*. W. P. Roth, *V. P*. and *Treas*. Robert H. Wright, *Sec*. J. G. Walling, *Asst. Sec*. and *Treas*. H. S. Stark, *Gen. Supt. Natural Gaso. Plants*. O. E. Cunningham, *Pur. Agt*. W. H. Kraft, *Ch*. Engr. Plants in California. Capacity, 42,000. (L.P.G. capacity, 10,000.)

Hope Construction & Refining Co., 445 W. Main St., Clarksburg, W. Va.
Loring L. Tonkin, *Pres*. J. C. Chisler, *V. P*. and *Treas*. Denton Borger, *Sec*. C. C. Reed, *Gen. Supt*. F. A. Benkert, *Pur. Agt*. Dr. R. W. Miller, *Ch. Chem*. John A. Clark, *Ch. Engr*. O. O. Perry, Clarksburg W. Va., *Supt*. Plants in West Virginia, Ohio, and Pennsylvania. Capacity, 116,300. (L.P.G. capacity, 30,000.)

Huber, J. M., Corp., Box 831, Borger, Tex.
H. W. Huber, *Pres*. E. M. Eckhart, Walter F. David, Earl Blackburn, *V. P.s*. Walter Huber, *Sec*. and *Treas*. D. H. Mathews, *Gen. Supt. Gaso. Plant*. Charles Ginther, *Pur. Agt*. Wayne Vaughn, *Ch. Chem*. Dan McGregor, *Ch. Engr*. D. H. Mathews, *Supt*. Plant in Texas. Capacity, 30,000.

Humble Oil & Refining Co., 1216 Main St., Houston, Tex.
R. L. Blaffer, *Chm. Bd*. and *Treas*. H. C. Wiess, *Pres*. E. E. Townes, James Anderson, John R. Suman, L. T. Barrow, Hines H. Baker, *V. P.s*. R. E. Seagler, *Gen. Atty*. H. K. Arnold, *Sec*. and *Asst. Treas*. Gay Carroll, *Compt*. J. K. Vaughn, *Asst. Compt*. R. E. Buckner, R. L. McAdoo, F. V. Lafayette, W. A. Hutsell, Box 518, Overton, Tex.; J. A. Lee, Box 837, Conroe; H. P. Elwood, Box 638, Dickinson; I. C. Corbell, Box 68, Tomball; W. J. McDougal, Box 327, Bloomington; J. E. Clayton, Rt. 1, Box 50, Corpus Christi, *Supts*. Plants in Texas. Capacity, 175,000. (L.P.G. capacity, 68,000.)

I

Indian Territory Illuminating Oil Co., Bartlesville, Okla.
Burdette Blue, *Pres*. C. H. Caldwell, *V. P*. and *Treas*. W. A. Jones, T. W. Tutweiler, R. L. Morton, A. V. Hoenig, R. L. Gordon, *V. P.s*. E. B. Emenhiser, *Sec*. T. A. Stevens, *Gen. Supt. Gaso. Plants*. C. M. Taylor, *Pur. Agt*. M. J. Kirwan, *Ch. Engr*. H. O. Harder, Box 4577, Capitol Hill Station, Oklahoma City; E. J. Klopfenstein, Box 391, Seminole. Okla.; James Porter, Box 1251, Bartlesville, Okla.. *Dist. Prod. Supts*. Plants in Oklahoma. Capacity, 80,000. (L.P.G. capacity, 30,000.)

Inglewood Gasoline Co., 639 South Spring St., Los Angeles, Calif.
Frank Blount, *Pres*. A. C. Wright, *V. P*. and *Treas*.

NON-STOP PROTECTION FOR OIL AND WATER PUMPS
TWIN
STRAINERS
Straining is an ELLIOTT specialty
When foreign matter slinks through your pipe lines and threatens those expensive, highly intricate pumps, then it's time to post an Elliott twin strainer on guard.
Twin strainers remove this objectionable matter—and with minimum pressure drop. Action is continuous. No time out for cleaning. When one basket becomes fouled, operation of valves diverts the flow to the companion cylinder. Cleaning is simple—just back off a few nuts, remove the cover, lift out and dump the fouled basket.
Many different industries have used twin strainers widely for years. Today oil men are installing these reliable, non-stop protectors in many places—from Field to Refinery.
Elliott Twin Strainers are made in a complete range of sizes for handling all types of liquids. Bulletins A-5 and A-6 tell the full story. Write today.
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STRAINERS THAT KEEP OUT TROUBLE

J. E. Heber, *Sec.* Karl G. Steinbeck, *Plant Supt.* Plants in California. Capacity, 16,000.

J

Jennings Bros. Co., E. H., 608 Columbia Bldg., Pittsburgh, Pa.

R. G. Jennings, *Pres.* E. D. Jennings, *V. P.* E. H. Jennings, *Sec.* R. G. Jennings, *Treas.* Plants in Pennsylvania and West Virginia. Capacity, 3,000.

K

Kansas Power & Light Co., The, 808 Kansas Ave., Topeka, Kans.

D. E. Ackers, *Pres.* C. E. Brock, Salina, Kans.; E. D. Bell, Abilene, Kans., *V. P.s.* H. E. Johnson, St. Louis, Mo., *Sec.* and *Treas.* R. B. McLaughlin, McPherson, Kans.; Wayne Austin, Medicine Lodge, Kans., *Supts.* Plants in Kansas. Capacity, 20,000.

Knox Refining Co., Broadway Tower, Enid, Okla.

Charles E. Knox, *Owner.* Roy E. Raemer, *Pur. Agt.* Henry Lane, Rt. A, Graham, Tex.; C. D. West, Garber, Okla., *Supts.* Plants in Oklahoma and Texas. Capacity, 4,500.

L

La Salle Petroleum Corp., Burkburnett, Tex.

P. D. Williams, *Pres.* W. J. Schnur, Tulsa, *V. P.* Earl A. Robinson, *Sec.* and *Treas.* F. A. Jamieson, *Sales Mgr.* Plant in Texas. Capacity, 5,000.

Lesh & McCall, City Natl. Bank Bldg., Wichita Falls, Tex.

P. F. Lesh and C. McCall, *partnership.* Plant in Texas. Capacity, 5,000.

Lisbon Gasoline Co., Inc., 1111 City Bank Bldg., Shreveport, La.

O. J. Dykes, *Pres.* D. W. Harris, *V. P.* T. J. Heard, *Sec.* B. R. Muirhead, *Treas.* D. L. Edmondson, Box 464, Henderson, *Supt.* Plant in Texas. Capacity, 50,000. (L.P.G. capacity, 35,000.)

Lomita Gasoline Co., Twenty-ninth and Orange Sts., Long Beach, Calif.

C. M. Cotton, *Pres.* A. A. Jergins, *V. P.* F. S. Wade, *V. P.* and *Treas.* L. V. Cassaday, *Sec.* M. S. Hubbell, *Gen. Supt.* H. A. Kuster, Bakersfield, *Supt.* Plants in California. Capacity, 70,000. (L.P.G. capacity, 20,000.)

Lone Star Gas Co., 1915 Wood St., Dallas, Tex.

D. A. Hulcy, *Pres.* R. A. Crawford, E. F. Schmidt, *V. P.s.* D. L. Cobb, *Sec.* and *Treas.* J. R. Jarvis, *Gen. Supt. Natural Gaso. Plants.* Harry Wheeldon, *Asst. Gen. Supt.* J. L. Foster, *Ch. Engr.* F. H. Townsend, Gordon, Tex.; H. C. Wells, Hollis, Okla.; J. F. Francis, Rt. 1, Cisco, Tex.; J. M. Phillips, Petrolia, Tex.; W. A. Robinson, Box 236, Trinidad, Tex., *Supts.* Plants located in Oklahoma and Texas. Capacity, 68,000.

Lone Star Gasoline Co., 1915 Wood St., Dallas, Tex.

D. A. Hulcy, *Pres.* R. A. Crawford, E. F. Schmidt, *V. P.s.* J. R. Jarvis, *Gen. Supt. Natural Gaso. Plants.* Harry Wheeldon, *Asst. Gen. Supt.* A. F. Garrett, *Sales Mgr.* B. R. Newberry, *Pur. Agt.* J. L. Thompson, *Ch. Chem.* J. L. Foster, *Ch. Engr.* J. M. Kindle, Box 341, Ranger; J. A. Bates, Box 1452, Breckenridge; J. L. Hamilton, Box 236, Grapeland, *Supts.* Plants in Texas. Capacity, 66,000.

Los Nietos Producing & Refining Co., Ltd., 714 W. Olympic Blvd., Los Angeles, Calif.

C. E. Doheny, *Pres.* Olin Welborn III, *V. P.* and *Treas.* R. S. Lytle, C. W. Smith, *V. P.s.* G. W. Johnson, Jr., *Sec.* George L. Thompson, Drawer J, Avenal, Calif., *Gen. Supt. Gaso. Plant.* W. H. Pierce, *Pur. Agt.* Harry Wolf, *Ch. Chem.* Plant in California. Capacity, 100,000.

Louisiana Iron & Supply Co., 2925 Mansfield Road, Shreveport, La.

Sam Y. Dorfman, *Pres.* Joe Gold, Mrs. Arthur Felber, *V. P.s.* Sam Sklar, *Sec.* and *Treas.* G. R. Perry, Box 189, El Dorado, Ark., *Gen. Supt.* Plants in Arkansas. Capacity, 17,000.

Louisville Gas & Electric Co., 311 W. Chestnut, Louisville, Ky.

T. B. Wilson, *Pres.* A. W. Lee, J. J. McKenna, R. Montgomery, *V. P.s.* F. J. Pfeiffer, *Sec.* J. A. Yunker, *Gen. Supt. Gaso Plant.* Graham Davies, *Sales Mgr.* and *Pur. Agt.* H. D. Robb, Winchester, *Supt.* Plant in Kentucky. Capacity, 1,500. (L.P.G. capacity, 700.)

Lynch Refining Co., Kilgore, Tex.

Nathan Lynch, *Owner.* Pete Cashell, *Sales Mgr* Harry Mathews, *Supt.* Paul Mathews, *Asst. Supt.* John A. Mings, *Pur. Agt.* Plant located in Texas. Capacity, 15,000.

Mc

McBride, W. C., Inc., 2101 Missouri Pacific Bldg., St. Louis, Mo.

B. O. Mahaffey, *Pres.* C. F. Buchner, Merle Becker, *V. P.s.* E. R. Christman, *Sec.* and *Treas.* Harold L. Crisman, *Gen. Supt.* B. R. Baker, *Ch. Engr.* Plant in Oklahoma. Capacity, 1,000.

M

Magnolia Petroleum Co., Box 900, Dallas, Tex.

D. A. Little, *Pres.* L. S. Sinclair, Walace Hawkins, M. J. McLaughlin, George Miller, J. L. Latimer, J. C. Stephens, J. W. Newton, *V. P.s.* Guy L. Tate, *Sec.* W. L. Holmes, *Treas.* R. D. Hanley, *Gen. Supt.* J. C. Stephens, *Sales Mgr.* J. P. David, *Pur. Agt.* H. L. Baker, Jr., *Ch. Chem.* C. V. Edwards, Jr., *Ch. Engr.* V. L. Dickinson, Box M, Smackover, Ark.; C. L. Simmons, Box 797, Kermit, Tex.; J. L. Brown, Drawer M, Olden, Tex.; C. F. Koch, Box 1232, Electra, Tex.; G. E. Cox, Box 741, Pampa, Tex.; T. L. Dobbins, Box 56, Sunray, Tex.; O. B. Zeek, Box 1172, Stonewall, Okla.; J. A. Upton, Box 538, St. Louis, Okla.; P. D. Blackburn, Box 792, Drumright, Okla.; W. J. Rodgers, Box 668, Healdton, Okla., *Supts.* Plants in Oklahoma, Texas and Arkansas. Capacity, 146,900.

Mahutska Oil Co., Robinson State Bank Bldg., Robinson, Ill.

Alex U. McCandless, *Pres.* L. G. Niehoff, *V. P.* and *Treas.* John A. Byerly, *Sec.* F. B. Barnes, *Gen. Supt.* S. H. Correll, Robinson; Fred Boyd, Oblong, *Supts.* Plants in Illinois. Capacity, 1,300.

Manhattan Gasoline Co., Natl. Bank of Tulsa Bldg., Tulsa, Okla.

J. H. Boyle, *Pres., Sec.* and *Treas.* D. E. Buchanan, *V. P.* R. E. Miller, *V. P.* and *Sales Mgr.* C. E. Wharton, *Gen. Supt.* E. H. Almond, Box 357, Sinton, Tex., *Supt.* Plant in Texas. Capacity, 25,000.

Mars Co., 308 Seneca St., Oil City, Pa.

George E. Welker, *Pres.* A. C. Burwell, J. G. Montgomery, Jr., *V. P.s.* H. S. Rose, *Sec.* and *Treas.* C. P. Garvey, *Sales Mgr.* M. J. Connor, *Pur. Agt.* J. R. Fay, *Ch. Chem.* E. L. Betz, East Hickory; J. J. Kane, Lewis Run; N. C. Gifford, Box 44, Clarion; W. C. McDonald, North Side Star Rte., Oil

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Dallas, Texas

City; W. E. Huggler, Van, *Supts.* Plants in Pennsylvania. Capacity, 21,300. (L.P.G. capacity, 2,000.)

Melrose Oil & Gas Co., Thistle Bldg., Sistersville, W. Va.
Neal K. Wilson, *Pres.* J. P. Flynn, *V. P.* Louis N. Thomas, *Sec.* A. W. Deuel, *Treas.* A. E. Woodburn *Gen. Supt.* A. W. Deuel, *Pur. Agt.* Claude H. Gorby, *Ch. Chem.* S. M. Tallman, *Ch. Engr.* A. E. Woodburn, *Supt.*, Middlebourne, W. Va. Plants in West Virginia. Capacity, 100.

Mid-Co Gasoline Co., Box 888, Corsicana, Tex.
C. A. Middleton, *Pres.* C. E. Middleton, *V. P.* H. H. Coffield, *Sec.* and *Treas.* Plant located in Texas Capacity, 10,000.

Mid-Continent Petroleum Corp., Mid-Continent Bldg., Tulsa, Okla.
Jacob France, *Pres.* G. O. Moody, *V. P.* A. D. Kneale, *Asst. Sec.* Charles Klein, *Treas.* F. E. Kearney, *Gen. Supt. Natural Gaso. Plants.* S. L. Gilliam, *Pur. Agt.* F. C. Bach, Rt. 3, Bristow; E. R. Burgess, Box 97, Leonard; R. H. Corbin, Box 387, Morris; J. A. Blakemore, Box 788, Cromwell; T. G. Merritt, Box 409, Stillwater, *Plant Supts.* Plants in Oklahoma. Capacity, 60,000. (L.P.G. capacity, 5,000.)

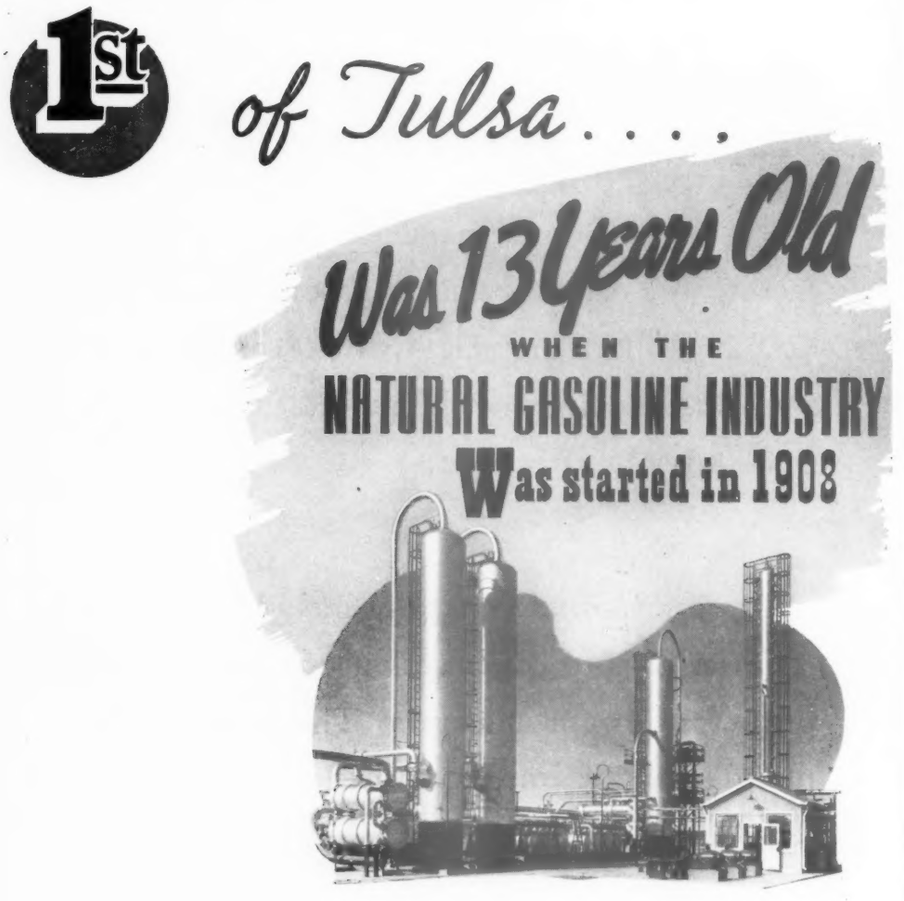
Midland Gasoline Co., Box 271, Conroe, Tex.
Henry M. Brown, *Pres.* H. T. McGowan, *V. P.* and *Sec.* F. D. Fiegel, *Treas.* W. L. Coffey, *Ch. Chem.* A. L. Howell, *Ch. Engr.* Charles W. Miller, *Supt.* Plant in Texas. Capacity, 30,000. (L.P.G. capacity, 15,000.)

Moore, Way & Harrison, Titusville, Pa.
Plant in Pennsylvania. Capacity, 100.

Mountain States Oil Corp., Colorado Bldg., Trinidad, Colo.
C. W. Barnholt, *Pres.* H. G. Stevenson, *V. P.* and *Gen. Supt.* E. A. Barnholt, *V. P.* and *Pur. Agt.* Melvin F. Schroeder, *Sec.* Higinio Cordova, *Treas.* Plant in Colorado. Capacity, 6,000.

N

Nash Gasoline Co., Graham, Tex.
Plant in Texas. Capacity, 8,000.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Each Day this Bank continues to serve
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Industry through intelligent OIL FINANCING
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Neal Gasoline Co., Atlas Life Bldg., Tulsa, Okla.
Roy O. Neal, *Pres.* and *Ch. Engr.* Bill A. Tucker, *Sec.* H. B. Neal, *Treas.* L. W. Blair, Box 186, Osage, Okla., *Supt.* Plant in Oklahoma. Capacity, 4,700.

Nine Oaks Gasoline Corp., Perkins Timberlake Bldg., Electra, Tex.
Roy L. Riner, *Pres.* L. J. Prince, *V. P.* E. B. Prince, *Sec.* and *Treas.* Frank M. Twibell, Rt. 2, Gladewater, Tex., *Supt.* Plant in Texas. Capacity, 3,000.

Northern Natural Gas Co., Aquila Court Bldg., Omaha, Neb.
B. R. Bay, *Pres.* H. J. Carson, *V. P.* and *Ch. Engr.* J. F. Merriam, *Sec.* and *Treas.* S. W. Taft, *Gen. Supt. Gaso. Plant.* C. F. Martin, *Pur. Agt.* E. S. Newton, Hugoton, *Supt.* Plant in Kansas. Capacity, 25,000.

Northern Utilities Co., Riverton, Wyo.
Plant in Wyoming. Capacity, 3,500.

Norwalk Co., 437 S. Hill St., Los Angeles, Calif.
Lional T. Barneson, *Pres.* H. J. Barneson, J. L. Barneson, *V. P.s.* L. L. Aubert, *Gen. Mgr.* H. M. Paulsen, *Asst. Gen. Mgr.* W. E. Kropp, *Sec.* Frank E. Davis, *Sales Mgr.* R. C. Boroff, *Pur. Agt.* L. J. Patrosso, Box O, Santa Fe Springs; K. E. Grigsby, Box 688, Maricopa, *Supts.* Plants in California. Capacity, 70,000.

O

Ohio Oil Co., 539 S. Main St., Findlay, Ohio
O. D. Donnell, *Pres.* C. L. Fleming, John McFayden, J. C. Donnell II, F. R. Clark, W. W. Fleming, G. E. McCullough, R. C. Gwilliam, *V. P.s.* E. B. Redpath, *Sec.* F. A. Bilistone, *Treas.* C. S. Sherk, *Pur. Agt* E. B. Charlton, Louisville Dist., Shreveport, La., I. L. Kerr, Illinois Dist., Robinson, Ill.; George Sewards, Wyoming Dist., Casper, Wyo.; W. E. Smith, Texas Div., Eliasville, Tex., *Supts.* Plants in Louisiana, Wyoming and Illinois. Capacity, 21,360.

Ohio Producing & Refining Co., 1405 E. Sixth St., Cleveland, Ohio
W. G. Hagan, *Pres.* W. G. Rogers, *V. P.* P. F. Leusch, *Sec.* and *Treas.* A. T. Code, *Pur. Agt.* C. F. Turner, *Ch. Chem.* Plant in Ohio. Capacity, 6,000.

Oil & Gas Co., The, 318½ Juliana St., Parkersburg, W. Va.
Reese Blizzard, *Pres.* A. D. Ireland, C. M. Bennett, *V. P.s.* Ross Wells, *Sec.* and *Treas.* W. D. Wells, Harrisville, W. Va., *Plant Supt.* Plant in West Virginia. Capacity, 250.

Oklahoma Gasoline Plants, Inc., Box 896, Sapulpa, Okla.
L. B. Jackson, *Pres.* E. E. Thompson, *V. P., Sales Mgr.* and *Pur. Agt.* W. Maurer, *Sec.* L. B. Jackson, Jr., *Treas.* Claude Loe, *Ch. Chem.* G. L. Newman, *Ch. Engr.* E. E. Fisher, Drumright, *Supt.* Plant in Oklahoma. Capacity, 10,000. (L.P.G. capacity, 6,500.)

Oklahoma Utilities Co., 123 W. Seventh, Bristow, Okla.
James A. Davis, *Pres.* C. D. Perry, R. C. Podge, *V. P.s.* J. G. McClelland, *Sec.* and *Treas.* A. C. Wright, *Gen. Supt.* V. L. Wilson, *Pur. Agt.* Plant in Oklahoma. Capacity, 5,000.

Owens, Libbey-Owens Gas Dept., Box 1375, Charleston, W. Va.
W. E. Spalding, *Mgr.* F. F. Ketchum, *Gen. Supt.* L. L. Kohlbecker, *Pur. Agt.* William B. Strong, *Ch. Engr.* Plant in West Virginia. Capacity, 10,000.

P

Pacific Western Oil Corp., 417 South Hill St., Los Angeles, Calif.
W. G. Skelly, *Pres.* H. M. Macomber, Emil Kluth, *V. P.s.* D. T. Staples, *Sec.* W. G. Gibson, *Treas.* W. F. Crane, *Gen. Supt.* R. L. Engle, *Pur. Agt.* W. N. Craddock, *Ch. Engr.* J. B. Norton, Box 86, Goleta, Calif.; B. S. Anderson, Box 450, Ventura, Calif., *Supts.* Plants in California. Capacity, 45,000.

Panhandle Eastern Pipe Line Co., 1221 Baltimore Ave., Kansas City, Mo.
Joe D. Creveling, *Pres.* Gerard J. Neuner, *V. P.* Leith V. Watkins, *Sec.* Louis F. Sperry, *Treas.* George T. Koch, *Gen. Supt.* S. A. Taylor, *Pur. Agt.* J. T. Russell, Liberal, Kans., *Plant Supt.* and *Ch. Chem.* Plant in Kansas. Capacity, 100,000.

Panhandle Refining Co., Box 1191, Wichita Falls, Tex.
Roy B. Jones, *Pres.* R. C. Stanford, G. W. Reed, *V. P.'s.* M. A. Chambers. *V. P.* and *Treas.* H. G.

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There's nothing visionary or theoretical about the value of *All-Wheel-Drive* in the oil fields. Operating men know, from observation and practical experience, that traction applied through all wheels *gets things done safer, faster and more economically* than is possible with any other type of transportation.

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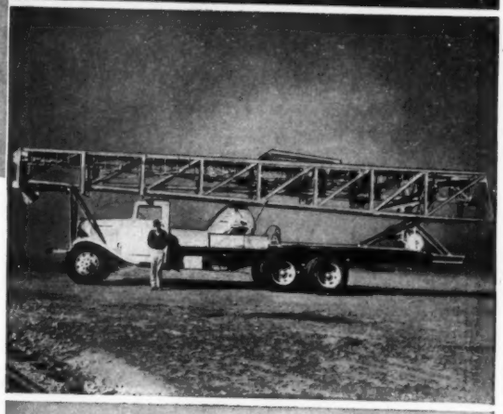

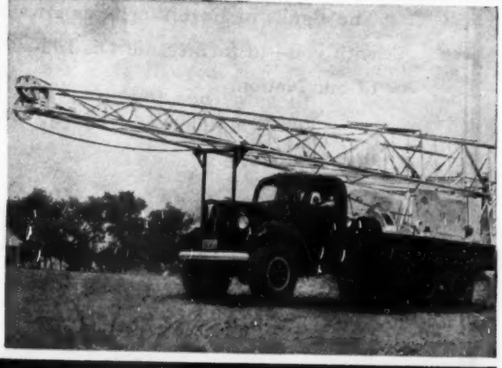

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Collier, *Sec.* E. W. Ellis, *Ch. Chem.* Roy J. Mann, *Pur. Agt.* Plant in Texas. Capacity, 1,000.

Parade Gasoline Co., Inc., 1308 New Commercial Bank Bldg., Shreveport, La.

John B. Atkins, *Pres.* and *Sales Mgr.* D. P. Hamilton, H. L. Hunt, *V. P.s.* A. G. Hill, *Sec.* and *Treas* E. L. Clover, *Gen. Supt.* R. A. Worley, *Pur. Agt* Joseph B. Gershovitz, *Ch. Chem.* Earl L. Clover. Box 528, Overton, Tex., *Supt.* Plant in Texas. Capacity, 95,000. (L.P.G. capacity, 30,000.)

Pennsylvania Oil Co., Sheffield, Pa.

Plant in Pennsylvania. Capacity, 10,000.

Peppers Gasoline Co., Box 86, Oklahoma City, Okla.

Charles C. Peppers, *Pres.* H. H. Champlin, *Sec.* and *Treas.* J. C. McConnico, *Supt.* Plants in Oklahoma. Capacity, 52,000.

Phillips Petroleum Co., Bartlesville, Okla.

K. S. Adams, *Pres.* Don Emery, *V. P.* and *Gen. Counsel.* G. G. Oberfell, *V. P. Research Dept.* H. E. Koopman, *V. P. Pur. Dept.* C. P. Dimit, *V. P. Prod. Dept.* M. P. Youker, *V. P. Ref. Dept.* F. E. Rice, *V. P. Nat. Gaso. Dept.* H. A. Trower, *V. P. Retirement Com.* A. M. Hughes, *V. P. Sales.* J. M. Sands *V. P. Economics.* C. R. Musgrave, *V. P. Traffic.* C. O. Stark, *V. P. Land* and *Geological Dept.* A. H. Riney, *V. P. Engr. Dept.* R. C. Jopling, *V. P. Public Relations.* T. K. Willett, Box 989, Oklahoma City; A. W. Paris, Box 358, Phillips, Tex.; W. R. Barrett, Rt. 2, Pampa, Tex.; H. F. Chapman, Box 6666, Odessa, Tex.; L. P. Clarke, Box 1332, Breckenridge, Tex.; L. B. Wood, Esperson Bldg., Houston, Tex., *Dist. Supts.* Walter Beets, C. A. Thorn, W. A. Allen, Carl Fisher, Box 989, Oklahoma City; R. L. Ford, Box 66, Shidler; W. R. Dickens, Box 350, Edmond; W. M. Zoller, Drawer B, Snomac; J. H. Oliver, 1314 N. Alabama, Okmulgee; R. L. Stewart Box 517, Fairfax; C. E. Thomas, Box 967, Wetumka; J. A. Johannes, Wewoka, Okla., *Supts.* A. F. Lasater, H. M. Rapp, Homer Gibson, John Rickard, J. E. Thompson, E. R. Martin, W. D. Kirkpatrick, T. L. Cubbage, E. L. Utsinger, E. C. Bell, Box 358, Phillips; L. V. Miller, W. C. Boatwright, H. F. Magerkurth, E. E. Traywick, Rt. 2, Pampa; J. F. Waters, Eliasville; J. F. Steed, South Bend; F. B. Joyce, Frankell; J. M. Williams, Ibex; R. C. Mason, Rt. 2, Bivens; G. N. Allison, Rt. 1, Electra; L. E. Cates, Box 507, Pioneer; J. L. Carroll, Box 66, Penwell; B. V. Wallis, Box 666, Crane; W. W. Ford, Box 66, Goldsmith; J. K. Gibson, Box 712, Pasadena; C. C. McIntosh, Drawer 7, Sunray; C. Heironimus, Box 66, Oil Center, N. M.; A. C. Brock, Drawer PP, Hobbs, N. M., Texas *Supts.* Plants in Oklahoma Texas and New Mexico. Capacity, 1,337,500.

Pioneer Corp., 624 S. Cheyenne, Tulsa, Okla.

Thomas C. Smith, *Pres.* Stanley A. Brander, A. D. Blackard, *V. P.s.* Carl Fritze, *Sec.* and *Treas.* W. W. Smyers, *Supt.* Plant in Oklahoma. Capacity, 2,500.

Pittsburgh Oil & Gas Co., Farmers Bank Bldg., Pittsburgh, Pa.

D. L. Frawley, *V. P.* J. T. Furlong, *Treas.* W. M. Holly, Butler, Pa.; C. R. Jeannerat, Clarion, Pa.; Arthur Couston, Macfarlan, W. Va., *Supts.* Plants in Pennsylvania, Ohio, and West Virginia. Capacity, 1,800.

Portland Gasoline Co., 1208 Public Service Bldg., Portland, Ore.

Chester A. Sheppard, *Pres.* Franklin T. Griffith, *V. P.* Hilmar Papst, *Sec.* R. J. Hagan, *Treas.* K. W. Bunch, *Gen. Supt.* M. A. Heath, *Ch. Chem.* B. G. Harris, *Ch. Engr.* Plant in Texas. Capacity, 30,000. (L.P.G. capacity, 8,000.)

Powers, M. F., 624 S. Cheyenne, Tulsa, Okla.

M. F. Powers, *Gen. Mgr.* S. McKay, *Ch. Engr.* L. E. Flanagan, Depew, *Supt.* Plant in Oklahoma. Capacity, 3,000. (L.P.G. capacity, 500.)

Preston Oil Co., 805 Atlas Bldg., Columbus, Ohio

Don M. Wilson, *Pres.* D. T. Ring, Ralph N. Parks, *V. P.s.* William M. Falion, *Sec.* N. E. Shupe, *Treas.* Robert M. Clark, *Sales Mgr.* Roy A. Schuster, *Gen. Supt.* Lee Myers, Rt. 2, Summerfield; Wilbur L. English, Box 304, Medina; J. W. Dumbaugh, Pavonia; W. P. Caley, Sugar Grove; L. A. Chrisman, Homer, *Supts.* Plants in Ohio. Capacity, 41,000.

Pure Oil Co., 35 E. Wacker Drive, Chicago, Ill.

Henry M. Dawes, *Pres.* R. W. McIlvain, C. B. Watson, N. H. Weber, *V. P.s.* Rawleigh Warner, *V. P.* and *Treas.* L. S. Westcoat, *V. P.* and *Sec.* R. H Carr, *Gen. Supt. natural gaso. plants.* R. H. McElroy, *Sales Mgr.* G. L. Parsons, *Pur. Agt.* C. R. Wagner, *Ch. Chem.* D. E. Sullivan, *Ch. Engr.* C. M. Downing, Drumright, Okla.; Jack Swift, Dawes, W. Va.; Joe McCurry, Seminole, Okla.; John Prater, Van, Tex., *Plant Supts.* Plants in Oklahoma, West Virginia, and Texas. Capacity, 92,000. (L.P.G. capacity, 21,000.)

R

Red Brush Oil Co., 10 Walnut St., Tidioute, Pa.

C. E. Gesin, *Sec.* and *Treas.* Carl Sibble, Tionesta, Pa., *Ch. Engr.* Plant in Pennsylvania.

Reno Oil Co., Wells Bldg., Sistersville, W. Va.

J. P. Flynn, *Pres.* T. B. Gregory, *V. P.* W. R. Reitz, *Sec.* and *Treas.* J. P. Flynn, *Gen. Supt.* and *Pur. Agt.* A. C. Mercer, Ellenboro, W. Va.; John McGuirk, R.F.D., Harrisville, W. Va.; Otto Woodburn and S. G. Hissam, R.F.D., Sistersville, W. Va.; C. E. Eddy, Wade, Ohio, *Supts.* Plants in West Virginia and Ohio Capacity, 1,800.

Rhodes Pool Gasoline Co., 806 City Natl. Bldg., Wichita Falls, Tex.

W. B. Hamilton, *Pres.* W. H. Hammon, *V. P.* and *Treas.* James E. Allison, *Sec.* B. F. Lawley, *Gen. Supt.* Plant in Texas. Capacity, 3,000.

Rice Ranch Oil Co., Hellman Bldg., Los Angeles, Calif.

J. C. Netz, *Pres.* George W. Lichtenberger, *V. P.* I. M. Hine, *Sec.* and *Treas.* Byron J. Billington, *Gen. Supt.* Plant in California. Capacity, 3,200.

Richfield Oil Corp., 555 S. Flower St., Los Angeles, Calif.

H. F. Sinclair, *Chm. Bd.* W. Alton Jones, *Chm. Finance Comm.* Charles S. Jones, *Pres.* W. T. Dinkins, *V. P.* and *Gen. Sales Mgr.* A. M. Kelley, Frank A. Morgan, *V. P.s.* M. Richard Gross, *Treas.* W. T. Autrey, *Compt.* Cleve B. Bonner, *Sec.* E. B. Downey, *Asst. Treas.* and *Asst. Sec.* Leonard Switzer, *Asst. Sec.* H. H. Kelly, *Pur. Agt.* H. R. Linhoff, *Mgr. Gas Oper.* C. E. Gotterba, *Gen. Supt.* E. P. Valby, *Gas Engr.* M. L. Arnold, *Ch. Engr.* C. E. Emery, W. L. Enoch, Box 470, Long Beach, Calif., *Plant Foremen.* I. M. Bumgardner, Box K, Taft, Calif., *Supt.*, Northern Div. Plants in California. Capacity, 104,000.

Roeser & Pendleton, Inc., 613 Fort Worth Club Bldg., Fort Worth, Tex.

Charles F. Roeser, *Pres.* M. R. Young, *V. P.* and *Treas.* A. M. Brackett, *Sec.* and *Pur. Agt.* G. P. Crutchfield, *Gen. Supt.*, Albany, Tex. R. C. Hammock, *Ch. Chem.* P. W. Armstrong, *Ch. Engr.* R. C. Hammock, C. A. Davis, *Supts.*, Albany, Tex Plants in Texas. Capacity, 34,000.

Rudco Oil & Gas Co., Box 2018, Tyler, Tex.

I. Rudman, *Pres.* Y. Scrinopskie, *V. P.* H. D. Lloyd, *Sec.* R. Rudman, *Treas.* N. W. Rudman, *Gen. Supt.* A. R. Hickey, Box 965, Desdemona, Tex.; G. W. King, Box 37, Rising Star, Tex., *Supts.* Plant in Texas. Capacity, 12,500.

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H. R. Dickerson, *Pres.* and *Treas.* H. H. Beeson, *V. P.* W. D. Wilson, *Sec.* D. E. Farris, *Gen. Supt.* Plant in Texas. Capacity, 60,000. (L.P.G. capacity, 40,000.)

Sand Hill Lease, Tidioute, Pa.

Alfred Peterson, *Supt.* Plant in Pennsylvania. Capacity, 100.

Say, George K., Estate, R.F.D. 2, Karns City, Pa.

Mrs. Bertha E. Say, *Treas.* Plant in Pennsylvania. Capacity, 35.

Shamrock Oil & Gas Corp., The, Amarillo Bldg., Amarillo, Tex.

H. C. Fownes II, *Pres.* P. C. Coffin and J. H. Dunn, *V. P.'s* Ray Johnson, *Sec.* W. C. Fownes, Jr., *Treas.* L. J. Wilmeth, *Sales Mgr.* R. G. Atkinson, *Gen. Supt.* H. U. Cook, *Supt. Gaso Plant.* F. H. Stone, *Ch. Engr.* Plant in Texas. Capacity, 90,000. (L.P.G. capacity, 10,000.)

Shell Oil Co., Inc., 50 W. Fiftieth St., New York, N. Y. (East of Rocky Mountains)

Alexander Fraser, *Pres.* F. A. C. Guepin, H. H. Anderson, E. D. Cumming, R. R. Griffin, L. T. Kittinger, N. J. McGaw, New York; P. E. Laken, Chicago; A. J. Galloway, Houston; R. B. Roark, Tulsa, *V. P.s.* C. S. Gentry, *Sec.* J. W. Watson, *Treas.* T. R. Goebel, Houston, *Gen. Supt.*, Louisiana Arkansas, New Mexico and Texas. B. R. Carney, Tulsa, *Gen. Supt.*, North Texas and Panhandle, Oklahoma, Kansas. L. T. Kittinger, *Sales Mgr.* W. H. Bratches, *Pur. Agt.* John L. May, Box 27, Iowa, La.; S. W. Craig, Box 518, Denver City, Tex.; C. E. Haines, Box 32, Magnolia, Ark.; S. U. Young, Box 548, Wilson, Okla.; L. Lamar, Drawer B, Wolco, Okla.; C. E. Smith, Box 38, Skellytown, Tex.; C. J. Goldston, Rt. 2, Pampa, Tex.; R. H. Medler, Box 398, Tonkawa, Okla.; E. A. Thoes, Box 78, Orlando, Okla., *Supts.* Plants in Oklahoma, Louisiana, Texas and Arkansas. Capacity, 243,000. (L.P.G. capacity, 28,000.)

Shell Oil Co., Inc., (California Division) 1008 West Sixth St., Los Angeles, Calif.

D. Heggie, *V. P.* Pacific Coast. F. S. Cullow (San Francisco), *V. P. Mfg.* L. G. McLaren, *V. P. Sales* Pacific Coast. B. D. Koontz, *Asst. Sec.* Pacific Coast. Plants in California. Capacity, 237,500.

Signal Oil & Gas Co., 811 W. Seventh St., Los Angeles, Calif.

S. B. Mosher, *Pres.* R. H. Green, O. W. March, *V. P.s.* H. J. March, *Sec.* J. H. Rounsavell, *Treas.* R. W. Heath, *Gen. Supt.* F. Lortscher, *Pur. Agt.* J. B. Taylor, Jr., *Ch. Chem.* G. L. Young, *Ch. Engr.* J. G. Hall, A. K. Kittelberger, 2501 E. Willow St.; G. Rear, Box 575, Goleta, Calif., *Supts.* Plants in California. Capacity, 110,000.

Sinclair Prairie Oil Co., Sinclair Bldg., Tulsa, Okla. (Gasoline Dept.)

C. L. Brown, *Gen. Supt.* H. M. Coulson, *Supt. Oper.* J. L. Gallagher, *Asst. Supt. Oper.* E. H. Counts, *Ch. Chem.* E. A. Wooden, *Ch. Engr.* A. T. Scherer, *Sales Mgr.* E. C. Howard, *Ch. Clerk.* G. H. Youker, Rt. 1, Drumright; W. D. Dolan, Box 578, Shamrock; B. C. Sharrett, Box 368, Covington; L. M. Kelsey, Box 6, Shidler; F. B. Pearce, Box 1070, Seminole; L. F. Kneeland, Box 871, Seminole; L. C. Van Cleave, Box 4188, Capitol Hill Station, Oklahoma City, Okla., *Plant Supts.* C. J. Tighe, Box 2312, Longview; V. H. Aker, Box CC, Arp; L. N. Yates, Box 576, Taft, Tex., *Plant Supts.* Steel B. White, Box 1809, Casper, Wyo., *Supt.* Plants in Oklahoma, Texas, and Wyoming. Capacity, 472,500.

Skelly Oil Co., Skelly Bldg., Tulsa, Okla.

W. G. Skelly, *Pres.* C. C. Herndon, J. D. Powell, H. M. Stalcup, A. H. Hyden, V. P.s. F. T. Hopp, *Sec.* and *Treas.* J. W. Vaiden, *Gen. Supt. Gaso. Plants.* J. D. Powell, *Sales Mgr.* Fred Robertson, *Pur. Agt.* F. E. Fisher, *Ch. Chem.* J. Y. Haslam, *Ch. Engr.* E. A. Emmons, Box 178, Stinnett, Tex.; J. A. Rush, Box 128, Skellytown, Tex., New Mexico and Texas *Dist. Supts.* G. L. Cradduck, James T. Crawford, W. J. Searle, J. A. Orton, Box 128, Skellytown, Tex.; A. H. Bazell, Box 816, Burkburnett, Tex., *Supts.* E. K. Anderson, Box 157, Lyman, Okla., Oklahoma and Kansas *Dist. Supt.*; G. E. Canaday, Box 236, Cunningham, Kans.; Clarence Lesher, Rt. 2, Fairfax, Okla.; R. E. Bullick, Box 379, Eunice, N. M.; H. E. Chambers, Box 157, Lyman, Okla.; J. T. Browning, Box 413, Wynona, Okla.; L Barrett, Harry Muns, Box 37, Carter Nine, Okla., *Supts.* Plants in Oklahoma, Kansas, Texas and New Mexico. Capacity, 411,000. (L.P.G. capacity, 131,000.)

Sloan & Zook Co., 101 Main St., Bradford, Pa.

R. T. Zook, *Pres.* William J. Sloan, *V. P.* and *Treas.* P. H. Zook, *V. P.* H. A. Rich, *Sec.* T. C. Johnson, *Sales Mgr.* and *Pur. Agt.* H. R. Johnson, Kane Supt. Plant in Pennsylvania. Capacity, 1,500. (L.P.G. capacity, 1,200.)

Smith Brothers Refinery Co., Inc., First and Main, McLean, Tex.

Ruel Smith, *Pres.* Bert Smith, *V. P.* T. J. Coffey, *Sec.* and *Treas.* S. L. Humphreys, *Gen. Supt.* Plant in Texas. Capacity, 40,000.

Snowden & McSweeney Co., 598 Madison Ave., New York, N. Y.

Henry McSweeney, *Pres.* J. P. Shannon, *V. P.* George G. Snowden, Jr., James M. Snowden, *second V. P.s.* Pearl M. Snowden, *Sec.* Marie H. Wright, *Treas.* John E. Baldwin, Bridgeport, Ill., *Supt.* George E. Baldwin, 1108 Sinclair Bldg., Fort Worth, Tex., *Supt. of Prod.* Plant in Illinois. Capacity, 1,000.

Southern Minerals Corp., 411 N. Broadway, Corpus Christi, Tex.

C. M. Brown, *Pres.* Maston Nixon, *V. P.* J. C. Hatridge, *Asst. to V. P.* J. H. Heroy, *Sec.* F. W. Currier, *Treas.* Roy Corbin, *Gen. Supt.* Shelton Lee. *Pur. Agt.* Frank Peterson, *Ch. Engr.* Plant in Texas. Capacity, 60,000. (L.P.G. capacity, 10,000.)

South Penn Oil Co., Chamber of Commerce Bldg., Pittsburgh, Pa.

P. H. Curry, *Pres.* Noel Robinson, J. G. Ward, *V. P.s.* John L. Hays, *Sec.* D. E. Crawford, *Treas.* W. P. Wissner, *Pur. Agt.* Plants in Pennsylvania. and West Virginia. Capacity, 31,900.

Standard Oil Co. of California, 225 Bush St., San Francisco, Calif.

H. D. Collier, *Pres.* R. K. Davies, A. S. Russell, J. H. Tuttle, R. C. Stoner, *V. P.s.* B. W. Letcher, *Sec.* G. J. O'Brien, *Treas.* A. K. Stevenson, *Asst. Sec.* Plants in California. Capacity, 617,000. (L.P.G. catpacity, 100,000.)

Standard Oil Co. of Texas, 225 Bush St., San Francisco, Calif.

A. J. Cunningham, *Pres.* E. H. Todd, *V. P.* R. G. McIntyre, *Sec.* and *Treas.* Plant in Texas. Capacity, 35,000.

Stanolind Oil & Gas Co., Philcade Bldg., Tulsa, Okla.

A. W. Peake, *Chm. Bd.* F. O. Prior, *Pres.* E. F. Bullard, A. M. McCorkle, *V. P.s.* F. J. Keleher, *Sec.* and *Treas.* C. S. Sanders, *Gen. Supt. Natural Gaso. Plants.* W. L. James, *Pur. Agt.* A. C. Andrews, Bishop, Tex.; A. H. Hall, Gilliam, La.; R. N. Hastings, Midwest, Wyo., *Supts.* Plants in Wyoming, Texas and Louisiana. Capacity, 122,500. (L.P.G. capacity, 9,000.)

Sunflower Natural Gasoline Co., 123 E. Main, Salem, Ill.

George S. Engle, *Pres., Sales Mgr.* and *Pur. Agt.* W. Van Alan Clark, *V. P.* Robert E. Rew, *Sec.*

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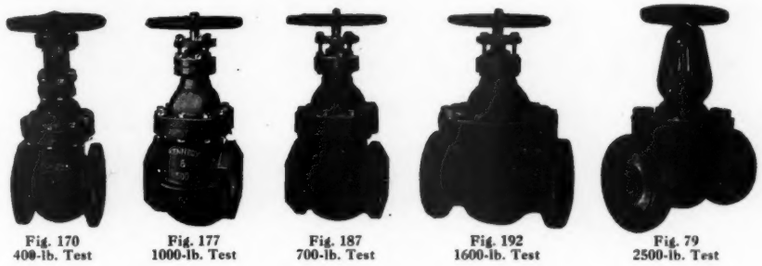

Fig. 170 400-lb. Test | Fig. 177 1000-lb. Test | Fig. 187 700-lb. Test | Fig. 192 1600-lb. Test | Fig. 79 2500-lb. Test

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E. E. Martin, *Treas.* J. C. Terry, *Gen. Supt.* Maurice Webb, *Ch. Chem.* R. J. Chambliss, *Ch. Engr.* Plant in Illinois. Capacity, 20,000. (L.P.G. capacity, 20,000.)

Superior Oil Co., Edison Bldg., Los Angeles, Calif.
W. M. Keck, *Pres.* W. A. Pruett, W. M. Keck, Jr., H. B. Keck, *V. P.s.* W. B. Wagner, *Sec.* F. D. Jones, *Treas.* S. F. Magor, *Gen. Supt.* George H. Barry, *Pur. Agt.* J. W. Judy, Box 266, Coalinga, Calif., Plant Supt. Plant in California. Capacity, 100,000. (L.P.G. capacity, 35,000.)

W. M. Surber, Sapulpa, Okla.
Plant in Oklahoma. Capacity, 5,000.

Surety Oil Co., R.F.D. 4, Titusville, Pa.
Plant in Pennsylvania. Capacity, 1,000.

T

Texas Co. (California), 929 S. Broadway, Los Angeles, Calif.
W. S. S. Rodgers, *Pres.*; R. L. Saunders, *Sec.*; L. H. Lindeman, *Treas.*, New York. T. H. Webb, *V. P* and *Gen. Mgr.* L. R. Holmes, *V. P.* Ira McFarland. Houston, *Compt.* J. T. Wood, Jr., *Mgr. Prod. Dept.* Plants in California. Capacity, 230,000.

Texas Co. (Delaware), 720 San Jacinto St., Houston, Tex.
W. S. S. Rodgers, *Pres.*; Harry T. Klein, *Exec. V. P.* and *Gen. Counsel;* H. W. Dodge, M. Halpern, R. Ogarrio, C E Olmsted, *V. P.s;* R. L. Saunders, *Sec.*; L. H. Lindeman, *Treas.*, New York. J. S. Leach, *V. P.* Ira McFarland, *Compt.* L. E. Barrows, *Mgr. Prod. Dept.* Plants in Texas, Louisiana, Oklahoma, Kansas and Illinois. Capacity, 106,530.

Texas Pacific Coal & Oil Co., Fort Worth National Bank Bldg., Fort Worth, Tex.
J. R. Penn, *Pres.* O. E. Mitchell, *V. P.* R. Seibel, *Sec.* and *Treas.* D. B. Hiatt, *Gen. Supt. Gaso. Plants.* O. E. Mitchell, *Sales Mgr.* J. C. Davis, *Pur. Agt.* D. J. Coasta, *Ch. Engr.* C. S. Bronstad, Caddo, Tex.; H. D. White, Strawn, Tex., *Plant Supts.* Plants in Texas. Capacity, 25,000.

Texoma Natural Gas Co., 20 N. Wacker Drive, Chicago, Ill.
F. C. Brown, *V. P.* and *Gen. Mgr.* S. E. Campbell, *Sec.* F. K. Macdonald, *Asst. Treas.* R. T. Powers, *Gen. Supt. Gaso. Plants.* L. E. Biggs, *Pur. Agt.* E. G. Hammerschmidt, *Ch. Chem.* G. W. Gibbs. Fritch, Tex., *Supt.* Plant in Texas. Capacity, 85,000.

Thomas, R. L., 290 Main St., Tidioute, Pa.
R. L. Thomas, *owner.* Plant in Pennsylvania. Capacity, 150.

Tide Water Associated Oil Co., 17 Battery Place, New York, N. Y.
William F. Humphrey, *Pres.* C. R. Barton, L. F. Bayer, J. D. Collins, L. D. Decius, B. I. Graves, George J. Hanks, L. D. Jurs, K. R. Hankinson, R. B. Pringle, R. E. Ryerson, Edward H. Salrin, *V. P.s.* William J. Burker, *Sec.* K. R. Hankinson, *Treas.* L. M. Jagon, *Gen. Supt. Gaso. Plants.* M. F. Bridges, Tulsa. Okla., *Pur. Agt.* R. W. Boyd, *Ch. Chem.* O. W. Gierow, *Ch. Engr.* Plant in Oklahoma. Capacity, 15,000.

Tompsett Bros., 15 Main St., Tidioute, Pa.
W. C. Tompsett, *Pres.* Plant in Pennsylvania. Capacity, 500.

Triangle Co., Pine Hollow Road, McKees Rocks, Pa.
J. B. Montgomery, *Pres.* John H. Montgomery, *Sec.* S. H. Morgan, *Treas.* A. A. Bock, *Gen. Supt.* Plant in Pennsylvania. Capacity, 100.

Triumph Petroleum Co., Route 2, Tidioute, Pa.
Ernest R. Johnson, *Owner.* Plant in Pennsylvania. Capacity, 150.

Tucker Oil Co., Wichita Falls, Tex.
J. J. Perkins, *Pres.* Charles J. Tucker, *V. P.* and *Gen. Supt.* Harold Murph, *Sec.* and *Treas.* L. B. Horr, Box 641, Burkburnett, Tex., *Plant Supt.* Plant in Texas. Capacity, 5,000.

Tyler Oil Co., Sistersville, W. Va.
H. J. Crawford, *Pres.* J. P. Flynn, *V. P.* Nell B. McCoy, *Sec.* J. P. Flynn, *Gen. Supt.* Plants in West Virginia and Ohio. Capacity, 150.

U

Union Gasoline & Oil Corp., Kanawha Valley Bldg., Charleston, W. Va.
Don M. Wilson, *Pres.* D. T. Ring, Ralph N. Parks, *V. P.s.* William M. Fallon, *Sec.* N. E. Shupe, *Treas.* Ralph N. Parks, *Sales Mgr.* J. E. Pew, *Ch. Chem.* Raymond Webb, Rt. 2, Moundsville; Charles Stackpole, Porters Falls; Rex Allman, Jane Lew, *Supts.* Plants in West Virginia. Capacity, 16,000.

Union Oil Co. of California, 617 W. Seventh St., Los Angeles, Calif.
Reese H. Taylor, *Pres.* A. C. Steward, *V. P. chg. Sales,* W. L. Stewart, Jr., A. C. Rubel, A. C. Galbraith, *V. P.s.* W. R. Edwards, *Sec.* E. H. Estill, R. F. Niven, *Asst. Secs.* M. G. Kerr, *Compt.* A. B. Mason, I. J. Hancock, *Asst. Compts.* H. W. Sanders, *Treas.* A. C. Marshall, *Asst. Treas.* R. D. Gibbs, *Gen. Supt. Natural Gaso. Plants* and *Mgr. Gas Oper.* H. C. Farquhar, *Pur. Agt.* E. W. Gard, *Mgr. R. & D.* J. C. Rector, Santa Fe Springs, Calif., *Supt. Gas Oper.* L. F. Scheel, Orcutt, Calif., *Gas Foreman.* Plants in California. Capacity, 285,500. (L.P.G. capacity, 25,000.)

United Carbon Co., Union Bldg., Charleston, W. Va.
Oscar Nelson, *Pres.* G. A. Williams, T. F. Koblegard, T. S. Reed, *V. P.s.* C. H. McHenry, *Sec.* T. A. Whelan, *Treas.* H. E. Norrick, *Gen. Supt.* A. G. Treadgold, *Sales Mgr.* C. A. Urban, *Pur. Agt.* G. A. Adams, Sayer, Okla., *Supt.* Plant in Oklahoma. Capacity, 15,000.

United Gas Pipe Line Co., United Gas Bldg., Shreveport, La.
N. C. McGowen, *Pres.* R. H. Hargrove, *V. P.* and *Gen. Mgr.* M. A. Abernathy, *V. P.* S. L. Davis, Compt. R. E. Hull, *Auditor.* J. H. Miracle, *Sec.* A. L. McClellan, *Treas.* W. F. Fulton, *Gen. Supt. Gaso. Plants.* F. L. Rhoades, *Asst. Gen. Supt.* R. A. Reeder, *Pur. Agt.* A. D. Greene, *Ch. Engr.* O. M. Campbell, Banquete, Tex.; J. A. Temple, Cotton Valley, La.; A. Meeks, Star Rte., Haughton, La.; L. O. Lawless, Bethany, La.; H. S. Ridings, Refugio, Tex.; J. L. Gilbert, Myrtis, La.; J. P. Hood, Athens, La., *Supts.* Plants in Louisiana and Texas. Capacity, 286,000.

Universal Consolidated Oil Co., 417 S. Hill St., Los Angeles, Calif.
E. G. Starr, *Pres.* R. E. Stearns, *V. P.* R. D. Miller *Sec.* and *Treas.* H. W. Parmelee, *Gen. Supt.* P. J. Hayes, *Pur. Agt.* C. J. Ricketts, 135th and Figueroa Sts., Los Angeles, *Supt.* Plant in California. Capacity, 9,000.

V

Vacuum Gasoline Co., Sullivan, Ind.
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Homer Means, Rt. 1, Bridgeport, Ill., *Supt.* Plants in Illinois. Capacity, 6,000.

Victor Gasoline Co., 624 S. Cheyenne, Tulsa, Okla.

M. F. Powers, *Pres.* and *Gen. Supt.* C. P. Quinlan, *V. P.* A. D. Blackard, *Sec.* Felix Quinlan, *Treas.* E. C. Sager, *Sales Mgr.* and *Pur. Agt.* J. W. Edwards, *Ch. Chem.* L. J. Rush, Box 272, Bristow, Okla., *Ch. Engr.* Erwin Fulkerson, Rt. 3, Stroud, Okla., *Supt.* Plants in Oklahoma. Capacity, 7,500. (L.P.G. capacity, 2,000.)

Vincennes Oil & Gas Co., Sullivan, Ind.

R. C. Kerlin, *Pres.* and *Gen. Supt.* F. E. Kerlin, *V. P.* William H. Smith, *Sec.* C. E. Kerlin, *Treas.* Homer Means, Rt. 1, Bridgeport, Ill., *Supt.* Plant in Illinois. Capacity, 1,000.

Virginian Gasoline & Oil Co., Kanawha Valley Bldg., Charleston, W. Va.

Don M. Wilson, *Pres.* D. T. Ring, Ralph N. Parks, *V. P.s.* William M. Falion, *Sec.* N. E. Shupe, *Treas.* Ralph N. Parks, *Sales Mgr.* J. E. Pew, *Ch. Chem.* K. Hawkins, Elkview; W. L. Hanyes, Clendenin; W. H. Evilsizer, Villa Rte., Charleston; C. R. Smith, Rt. 2, St. Albans; George Kiser, Hubball; C. H. Copenhaver, Elkview; George S. Robinson, Box 162, Mammoth; Ray Grabeel, Ona; H. W. Critchfield, Sandyville; W. F. Burdette, Three Mile; S. M. Pittman, Rt. 1, Charleston; Ramie J. Grady, Box 388, Spencer, Owen Wheeler, Rt. 1, Catlettsburg (Kentucky); M. H. Grifith, Kermit, *Supts.* Plants in Ohio and Kentucky. Capacity, 184,800. (L.P.G. capacity, 7,000.)

W

Wahl, A. R., 249 Main St., Evans City, Pa.

A. R. Wahl, *Owner.* Plant in Pennsylvania. Capacity, 150.

Waggoner Estate, W. T., Vernon, Tex.

G. L. Waggoner, *Pres.* G. M. Shanor, *Gen. Supt.* Harry Jenkins, *Sales Mgr.* J. T. McNamara, *Pur. Agt.* B. H. Gibbons, *Supt.* Plant in Texas. Capacity, 7,000. (L.P.G. capacity, 1,000.)

Warner-Caldwell Oil Co., Second Natl. Bank Bldg., Titusville, Pa.

Alex N. Warner, *Pres.* and *Gen. Supt.* James H. Caldwell, *V. P.* Floyd B. August, *Sec.* and *Treas.* John T. Dalton, *Supt.* Plant in Pennsylvania. Capacity, 1,000.

Warren Petroleum Corp., Natl. Bank of Tulsa Bldg., Tulsa, Okla.

W. K. Warren, *Pres.* J. A. La Fortune, *Exec. V. P.* H. W. Harts, *V. P. Chg. Mfg.* H. E. Felt, *V. P.* and *Sec.* A. J. Murphy, *Treas.* S. I. Hulse, *Sales Mgr.* J. R. Strain, *Pur. Agt.* L. M. Mauney, *Ch. Chem.* L. A. Boyd, *Ch. Engr.* W. H. Williams, Box 686, Graham, Okla.; L. D. Parker, Box 37, Harjo, Okla.; A. S. Votaw, Box 67, Monument, N. M.; J. W. Kearney, Box 157, Galva, Kans.; C. V. Quinn, Box 7, Fairbanks, Tex.; F. E. Thompson, Box 439 Salem, Ill.; S. M. Barrett, Jr., Box 678, Aransas Pass, Tex.; D. B. Young, Fittstown, Okla., *Supts.* Plants in Oklahoma, Kansas, Texas, Illinois and New Mexico. Capacity, 255,000. (L.P.G. capacity, 77,500.)

Westates Petroleum Corp., 391 Sutter St., San Francisco, Calif.

J. W. Pauson, *Pres.* A. J. Scampini, *V. P.* R. A. Earle, *V. P.* and *Gen. Supt. Gas. Plant.* R. J. Sunderhauf, *Sec.* Hugh K. McKevitt, *Treas.* Glenn Fisher, Box 57, Coalinga, *Supt.* Plant in California Capacity, 300.

West Coast Refining Co., 555 S. Flower St., Los Angeles, Calif.

A. H. Bradford, *Pres.* M. D. Schatzman, *V. P.* B. M. Hennessey, Placentia, Calif., *Supt.* Plant in California. Capacity, 50,000.

Western States Gasoline Corp., 609 South Grand Ave., Los Angeles, Calif.

C. R. Gallagher, *Pres.* E. McGowan, *V. P.* and *Treas.* G. C. O'Connell, *Sec.* C. E. Spangler, *Pur. Agt.* V. F. Garman, *Ch. Chem.* W. N. Roper, *Ch. Engr.* Plants in California. Capacity, 170,000.

West Texas Gas Co., Box 1121, Lubbock, Tex.

Albert R. Jones, 900 Land Bank Bldg., Kansas City, *Pres.* R. F. Hinchey, *V. P.* P. C. Spencer, *V. P.* George Baird, *Sec.* and *Treas.*, 630 Fifth Ave., New York City. M. D. Snyder, Box 151, Amarillo, Tex., *V. P.* E. C. Wagner, Box 151, Amarillo, Tex., *Gen. Supt. Gaso. Plant.* E. D. Parker, *Pur. Agt.* John S. LeGate, Fritch, Tex., *Supt.* Plant in Texas. Capacity, 25,000.

Wilmington Gasoline Co., 555 S. Flower St., Los Angeles, Calif.

William C. McDuffie, *Pres.* R. C. Enderly, *V. P.* and *Gen. Supt.* H. R. Leonard, *Sec.* Fleary Pact, *Supt.* Plant in California. Capacity, 30,000. (L.P.G. capacity, 10,000.)

Wilshire Oil Co., Inc., 2455 East Twenty-seventh St., Los Angeles, Calif.

George L. Machris, *Pres.* Maurice A. Machris, *V. P.* Guy Linton, *Sec.* and *Treas.* L. A. Seppi, *Gen. Supt.* M. M. Fletcher, *Sales Mgr.* Fred Behrens, *Ch. Chem.* A. A. Pateracki, *Pur. Agt.* O. E. Liddell, *Ch. Engr* Plant in California. Capacity, 50,000.

Wright, Rosa B., 1724 Main St., Sapulpa, Okla.

Rosa B. Wright, *Pres.* J. A. Rettenmeyer, *Gen. Supt.* and *Pur. Agt.* M. L. Murphy, *Sales Mgr.* A. B. Nigh, *Ch. Engr.* Plant in Oklahoma. Capacity, 5,000.

Y

Yale Gasoline Co., Yale, Okla.

C. W. Stepp, *Owner.* Glen Hewitt, *Ch. Engr.* Plant in Oklahoma. Capacity, 1,500.

Courts Hold Oil Companies Not Liable for Taxes On Bulk-Station Employes

NEW YORK, Apr. 22.—Oil companies are not liable for social security or unemployment taxes on the operation of their bulk plants by independent owners. This decision was reached in two decisions handed down recently in United States circuit courts in Chicago and New York.

The Appeals Court for the Seventh Circuit (at Chicago) handed down a decision affirming and adopting the decision of the federal District Court in a case in which Indian Refining Co. and Frank J. Kolb sued V. Y. Dallman, collector of internal revenue, to recover taxes paid on the business of Mr. Kolb, its consignee at Paducah, Ky., for 1938 and 1939.

A similar decision was returned by the Appeals Court for the Second Circuit in New York in a case of Texas Co., of which Indian is a subsidiary.

MARSH
SOMETHING FINER
in a Reid Vapor Test Gauge
THE lustrous Phenol Condensate case makes this finer gauge sturdy, unbreakable, non-corrosive, vapor-proof . . . yet "light as a feather". Thanks to the remarkable accuracy of its precision movement, those fine graduations mean exactly what they say—and of course the exclusive Marsh "Recalibrator" is right there to maintain that accuracy.
It looks its quality, too . . . A red needle-tip pointer moves over a satin-silver dial with sharp, black, easy-to-read graduations. That convenient, highly polished handle completes the picture of a finer instrument.
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2065 Southport Avenue, Chicago, Illinois
• Your supply house, backed by our large local stocks, can fill your orders promptly for this and other Marsh Gauges—a type for every service.
REID VAPOR TEST
GAUGES

Natural Gasoline Plants in the United States

April 1, 1941

ARKANSAS

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Arkla Oil Co., Dallas Tex.	Sec. 11-20-28, A. A. Capps lease, Miller County	Absp.	40,000
Carter Oil Co., El Dorado	El Dorado	C-A	15,000
Gulf Refining Co., El Dorado	Sec. 8-18-15, Union County	Absp.	*5,000
Louisiana Iron & Supply Co., El Dorado	El Dorado	Absp.	4,000
Louisiana Iron & Supply Co., El Dorado	El Dorado	Absp.	5,000
Louisiana Iron & Supply Co., El Dorado	El Dorado	Absp.	3,000
Louisiana Iron & Supply Co., El Dorado	Louann	Absp.	5,000
Magnolia Petroleum Co., Kenova	Union Co.	Absp.	8,000
Shell Oil Co., Inc., Magnolia†	Magnolia	C-A	35,000

*Shut down. †Atlantic Refining Co. et al own one-half interest.

CALIFORNIA

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Bankline Oil Co., Signal Hill	American Colony Tract, Los Angeles Co.	Absp.	25,000
Barnsdall Oil Co., Goleta	Sec. 15-4n-29w, Santa Barbara County	Absp.	24,000
Belridge Oil Co., McKittrick	Sec. 26-27s-20e M.D.M.	Absp.	70,000
Belridge Oil Co., McKittrick	Sec. 26-27s-20e M.D.M.	Absp.	70,000
Belridge Oil Co., Taft	Elk Hills	Absp.	5,000
Brea Canon Oil Co., Los Angeles	Brea-Olinda	Absp.	14,000
Coline Gasoline Corp., Torrance	Torrance	Absp.	25,000
Coline Gasoline Corp., Ventura	Rincon	Absp.	17,000
Cowan Oil & Ref. Co., Belridge	Belridge-Lost Hills field	Absp.	30,000
Cowan Oil & Gas Co., Rosecrans	Rosecrans	Absp.	20,000
Del Rey Oil & Gas Co., Venice	Playa Del Rey field	Absp.	30,000
Del Valle Gasoline Co., Los Angeles	Ventura	Absp.	15,000
Field, O. C., Gasoline Corp., Huntington Beach	Huntington Beach	Absp.	70,000
Field, O. C., Gasoline Corp., Montebello	East Lincoln	Absp.	30,000
General Pet. Corp., of Calif., Brea-Olinda	Brea-Olinda	Absp.	*20,000
General Pet. Corp. of Calif., Athens-Rosecrans	Athens-Rosecrans	C-A	40,000
General Pet. Corp. of Calif., Santa Fe Springs	Santa Fe Springs	Absp.	55,000
General Pet. Corp. of Calif., Ventura	Barnard lease, Ventura	Absp.	40,000
General Pet. Corp. of Calif., Wilmington	Wilmington	Absp.	60,000
Gilmore-Dabney, Inc., Long Beach	Signal Hill	Absp.	30,000
Honolulu Oil Corp., Taft	Midway Sunset (2 plants)	Absp.	42,000
Inglewood Gasoline Co., Long Beach	Inglewood	Absp.	*4,000
Inglewood Gasoline Co., Long Beach	Long Beach	Absp.	12,000
Lomita Gasoline Co., Signal Hill	Jergins lease	Absp.	50,000
Lomita Gasoline Co., Mountain View	Mountain View	Absp.	20,000
Los Nietos Producing & Refining Co., Ltd., Avenal	Kettleman Hills	Absp.	100,000
Norwalk Co., The, Maricopa	Midway-Sunset	Absp.	10,000
Norwalk Co., The, Maricopa	Midway-Sunset	Absp.	10,000
Norwalk Co., The, Santa Fe Springs	Santa Fe Springs	Absp.	50,000
Pacific Western Oil Corp., Los Angeles	Elwood	Absp.	20,000
Pacific Western Oil Corp., Los Angeles	Ventura	Absp.	25,000
Rice Ranch Oil Co., Santa Maria	Near Orcutt, Santa Barbara County	Absp.	3,200
Richfield Oil Corp., Richfield-Western	Richfield-Western	Absp.	32,000
Richfield Oil Corp., Elk Hills	Crampton lease	Absp.	*5,000
Richfield Oil Corp., El Segundo	El Segundo	Absp.	12,000
Richfield Oil Corp., Huntington Beach	Huntington Beach	Absp.	*15,000
Richfield Oil Corp., Signal Hill	Long Beach	Absp.	25,000
Richfield Oil Corp., Hobson	Rincon	Absp.	*15,000
Shell Oil Co., Inc., Fullerton	Brea	Absp.	20,000
Shell Oil Co., Inc., Bicknell	Capitan	Absp.	5,000
Shell Oil Co., Inc., Compton	Dominguez	Absp.	25,000
Shell Oil Co., Inc., Long Beach	Long Beach	Absp.	80,000
Shell Oil Co., Inc., Bicknell	Santa Maria	Absp.	2,500
Shell Oil Co., Inc., Bakersfield	Ten Section	Absp.	15,000
Shell Oil Co., Inc., Ventura	Ventura	Absp.	90,000
Signal Oil & Gas Co., Elwood	Elwood	Absp.	10,000
Signal Oil & Gas Co., Long Beach	Long Beach	Absp.	40,000
Signal Oil & Gas Co., Long Beach	Long Beach	Absp.	15,000
Signal Oil & Gas Co., Long Beach	Long Beach	Absp.	*30,000
Signal Oil & Gas Co., Long Beach	Long Beach	Absp.	*15,000
Standard Oil Co. of Calif., Lost Hills	Cahn lease	Absp.	4,000
Standard Oil Co. of Calif., Brea	Brea	Absp.	5,500
Standard Oil Co. of Calif., Murphy-Coyote	Murphy-Coyote	Absp.	30,000
Standard Oil Co. of Calif., Greeley	Kern Co., Section 20	Absp.	20,000
Standard Oil Co. of Calif., Huntington Beach	Hunt. "E" lease, Huntington Beach	Absp.	10,000
Standard Oil Co. of Calif., Huntington Beach	Hunt. "D" lease, Huntington Beach	Absp.	30,000
Standard Oil Co. of Calif., Huntington Beach	Hunt. "A" lease, Huntington Beach	Absp.	*12,000
Standard Oil Co. of Calif., Inglewood	Inglewood, Inv. 1	Absp.	15,000
Standard Oil Co. of Calif., Kettleman Hills	Sec. 29-V lease	Absp.	*6,500
Standard Oil Co. of Calif., Kettleman Hills	Sec. 11-P lease	Absp.	65,000
Standard Oil Co. of Calif., Kettleman Hills	Sec. 3-P	Absp.	120,000
Standard Oil Co. of Calif., Kettleman Hills	Sec. 33-J lease	Absp.	100,000
Standard Oil Co. of Calif., Long Beach	Mary M. Engle lease	Absp.	18,000
Standard Oil Co. of Calif., Taft	Sec. 1-C lease	Absp.	15,000
Standard Oil Co. of Calif., Taft	Sec. 7-D lease	Absp.	17,500
Standard Oil Co. of Calif., Taft	Sec. 31-E lease	Absp.	10,000
Standard Oil Co. of Calif., Taft	Sec. 29-G lease	Absp.	*12,000
Standard Oil Co. of Calif., Mountain View	Sec. 32-Z lease	Absp.	12,000
Standard Oil Co. of Calif., Coalinga	Sec 19-B	Absp.	5,000
Standard Oil Co. of Calif., Santa Fe Springs	Santa Gertrudes, Santa Fe Springs	Absp.	40,000
Standard Oil Co. of Calif., Seal Beach	San Gabriel lease	Absp.	23,000
Standard Oil Co. of Calif., Torrance	Joughin lease	Absp.	7,000
Standard Oil Co. of Calif., Ventura	Llovd, Ventura	Absp.	41,000
Standard Oil Co. of Calif., Ventura	McGonigle Llovd, Ventura	Absp.	29,000
Superior Oil Co., Coalinga	Kettleman Hills	Absp.	100,000
Texas Co., Huntington Beach	Huntington Beach	Absp.	20,000
Texas Co., Signal Hill	Signal Hill	Absp.	75,000
Texas Co., Montebello	Montebello	Absp.	40,000
Texas Co., Santa Fe Springs	Santa Fe Springs	Absp.	50,000
Texas Co., South Mountain	South Mountain, Ventura County	Comp.	10,500
Texas Co., Shiells Canyon	Shiells Canyon, Ventura County	Absp.	35,000
Union Oil Co. of Calif., Los Angeles	Stearns lease, Brea-Olinda	Absp.	22,500
Union Oil Co. of Calif., Los Angeles	Hellman lease, Dominguez	Absp.	69,000
Union Oil Co. of Calif., Los Angeles	King lease, Kettleman Hills	Comp.	30,000
Union Oil Co. of Calif., Los Angeles	Morse lease, Richfield	Absp.	10,000

CALIFORNIA (Continued)

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Union Oil Co. of Calif., Los Angeles	Rosecrans lease, Rosecrans	Absp.	25,000
Union Oil Co. of Calif., Los Angeles	Bell lease, Santa Fe Springs	Absp.	70,000
Union Oil Co. of Calif., Los Angeles	Newlove lease, Santa Maria	Absp.	15,000
Union Oil Co. of Calif., Los Angeles	Kernco "34" lease, Rio Bravo	Absp.	15,000
Universal Consolidated Oil Co., Los Angeles	Rosecrans	Absp.	9,000
Westates Pet. Corp., Coalinga	Coalinga	Absp.	300
West Coast Ref. Co., Placentia	Richfield, Orange Co.	Absp.	50,000
Western States Gasoline Corp., Avenal	Kettleman Hills, Kings Co.	Absp.	160,000
Western States Gasoline Corp., Ventura	San Miguelito, Ventura	Absp.	10,000
Wilmington Gasoline Co., Wilmington	Terminal Island	Absp.	30,000
Wilshire Oil Co., 2455 E. 27th St., Vernon	Santa Fe Springs	Absp.	50,000

*Shut down.

COLORADO

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Fort Collins Prod. Corp., Fort Collins	Fort Collins	Comp.	1,000
Mountain States Oil Corp., Barela	SE Sec. 3-33s-62w	Absp.	6,000

ILLINOIS

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Arkansas Fuel Oil Co., Robinson	Sec. 3, Prairie Twp., Crawford County	Comp.	500
Borough, Breen et al, Lawrenceville	Lawrenceville	Comp.	350
Brenneman & MacDonell Oblong	1 mi. E Oblong, Crawford county	Comp.	1,200
Brenneman & MacDonell Oblong	6 mi. N Oblong, Crawford County	Comp.	400
Carter Oil Co., St. Elmo	Louden pool	Absp.	20,000
Mahutska Oil Co., Robinson	Dist. 1 and 2, Crawford County (two plants)	Comp.	1,300
Ohio Oil Co., Oblong	Crawford County (six plants)	Comp.	2,900
Ohio Oil Co., Robinson	Crawford County	Comp.	240
Ohio Oil Co., Hardinville	Crawford Co. (two plants)	Comp.	850
Ohio Oil Co., Stoy	Crawford County	Comp.	850
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,050
Ohio Oil Co., Casey	Clark County	Comp.	1,150
Snowden & McSweeney Co., Bridgeport		Comp.	1,000
Sunflower Natural Gasoline Co., Salem	Salem	Absp.	20,000
Texas Co., Salem	Salem	Absp.	33,000
Vacuum Gasoline Co., Bridgeport	4 mi. SE Bridgeport	Comp.	2,000
Vacuum Gasoline Co., Bridgeport	6 mi. NW Bridgeport	Comp.	4,000
Vincennes Oil & Gas Co., Bridgeport	5 mi. NW Bridgeport	Comp.	1,000
Warren Petroleum Corp., Salem	Marion County	Absp.	60,000

KANSAS

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Aldon Gasoline Co., P.O. Box F, Haven	Sec. 5-25-4, Reno County	Absp.	10,000
Barnsdall Oil Co., Oxford	W½ NW Sec. 20-33-3, Cowley County	Absp.	8,000
Cities Service Oil Co., Arkansas City	SE Sec. 13-34-3, Cowley County	Absp.	15,000
Cities Service Co., Burrton	W½ Sec. 25-23-4, Reno County	Absp.	35,000
Cities Service Oil Co., Haven	N½ SE Sec. 17-24-4, Reno County	Absp.	25,000
Cities Service Oil Co., Wichita	NW Sec. 17-28-1, Sedgwick County	Absp.	50,000
Cities Service Oil Co., Hamilton	SW Sec. 16-23-9, Greenwood County	Comp.	3,000
Kansas Power & Light Co., Topeka	Medicine Lodge	Absp.	10,000
Kansas Power & Light Co., Topeka	McPherson	Absp.	10,000
Northern Natural Gas Co., Hugoton	NW Sec. 19-33n-36w, Stevens County	Absp.	25,000
Panhandle Eastern Pipe Line Co., Liberal	Secs. 23 and 25-33s-32w, Seward County	Absp.	100,000
Skelly Oil Co., Cunningham	N½ NE Sec. 30-27s-10w, Kingman County	Absp.	50,000
Texas Co., (Del), Atlanta	SW SE Sec. 31-30s-6e, Cowley County	Absp.	7,500
Warren Petroleum Corp., Galva	McPherson County	Absp.	30,000

KENTUCKY

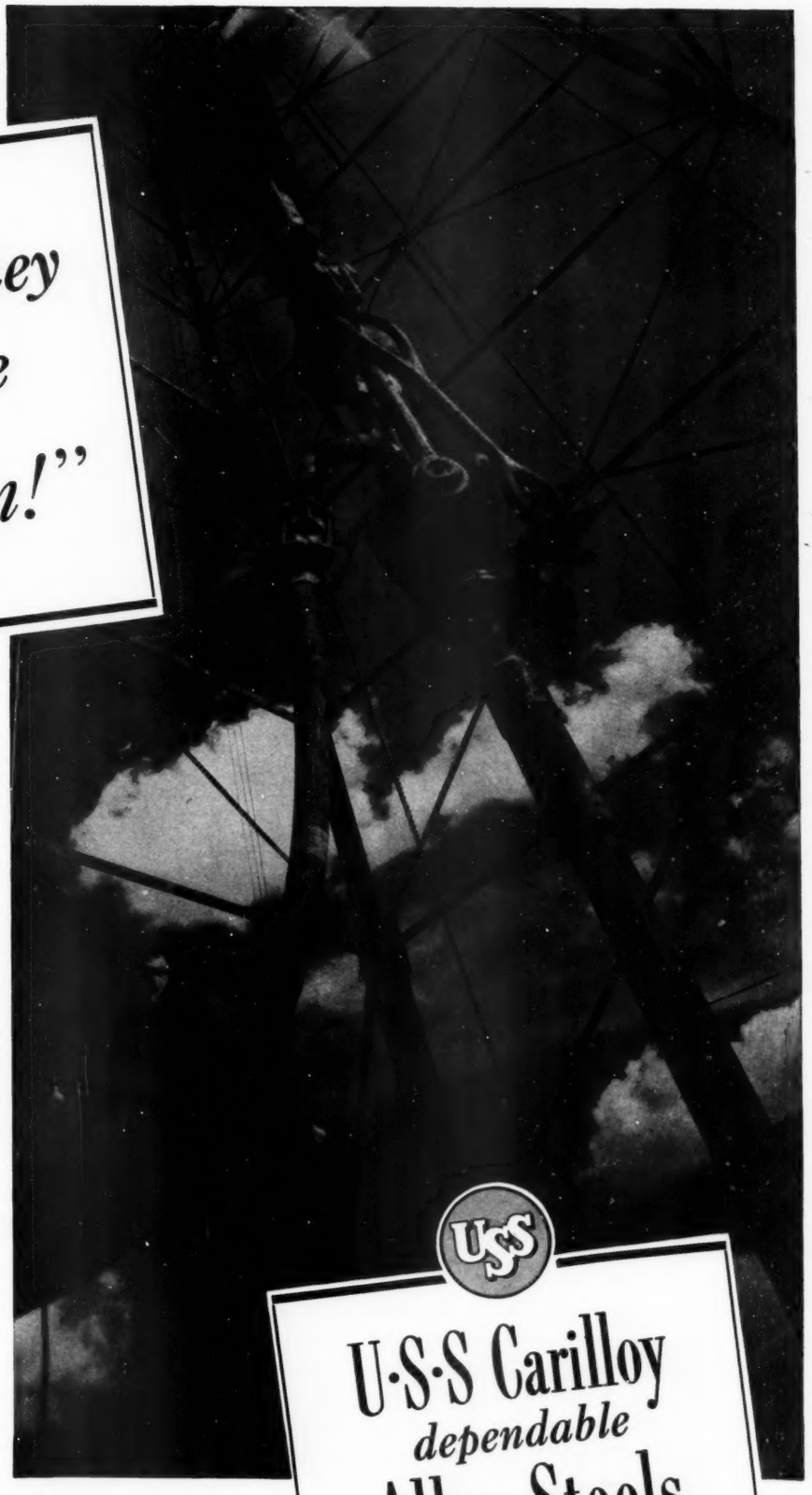
Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Louisville Gas & Electric Co., Louisville	Winchester	Char.	1,500
Virginian Gasoline & Oil Co., Catlettsburg	Boyd County	Absp.	40,000
Virginian Gasoline & Oil Co., Kermit, W. Va.	Martin County	Absp.	10,000

LOUISIANA

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Anchor Gasoline Co., Eola	Sec. 1-2s-2e, Avoyelles Parish	Absp.	30,000
Arkansas Fuel Oil Co., Haughton	Sec. 7-17n-11w, Bossier Parish	Absp.	16,000
Arkansas Fuel Oil Co., Rodessa	Sec. 26-23n-16w, Caddo Parish	Absp.	25,000
Arkansas Fuel Oil Co., Shreveport	Sec. 34-18n-14w, Caddo Parish	Absp.	15,000
Arkansas Fuel Oil Co., Homer	Sec. 24-21n-8w, Claiborne Parish	Comp.	5,000

ABBREVIATIONS

Absp.	Absorption	Char.	Charcoal
Comp.	Compression	V.R.	Vapor Rectification
C-A	Compression and Absorption		
L.P.G.	Liquefied Petroleum Gas		



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United States Steel Export Company, New York

UNITED STATES STEEL

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FOXBORO
REG. U. S. PAT. OFF.

Stabilog Potentiometer Controllers

LOUISIANA (Continued)

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Arkansas Fuel Oil Co., Simsboro	Sec. 3-18n-4w, Lincoln Parish	Absp.	13,000
Arkansas Fuel Oil Co., Sibley	Sec. 36-17n-10w, Webster Parish	Absp.	20,000
Carter Oil Co., Trees	Caddo field, near Trees	C-A	6,000
Carter Oil Co., Homer	Homer field, Claiborne Parish	Comp.	6,000
Coltexo Corp., Rodessa	Caddo Parish	Absp.	40,000
Continental Oil Co., Basile	NW Sec. 28-7s-2w, Acadia Parish	Absp.	20,000
Continental Oil Co., Lake Charles	SW Sec. 14-9s-8w, Calcasieu Parish	Absp.	10,000
Continental Oil Co., Ville Platte	Fontenot lease, Evangeline Parish	Absp.	75,000
East Texas Refining Co., Rodessa	Rodessa townsite	Comp.	5,000
Glen Rose Gasoline Co., Rodessa	Rodessa	Absp.	35,000
Great National Oil Corp., Ida	Rodessa field	Absp.	25,000
Gulf Refining Co., Mooringsport	Sec. 19-21-7, Claiborne Parish	Absp.	15,000
Gulf Refining Co., Mooringsport	Sec. 19-20-5, Caddo Parish		8,000
Ohio Oil Co., Treat	Webster Parish	Absp.	2,000
Ohio Oil Co., Haynesville	Claiborne Parish	Absp.	2,000
Ohio Oil Co., Haynesville	Claiborne Parish	Absp.	2,000
Shell Oil Co., Inc., Iowa	NW Sec. 18-9s-6w, Jefferson Davis Parish	C-A	15,000
Stanolind Oil & Gas Co., Gilliam	Pine Island field	Absp.	2,500
Texas Co. (Del.), Lafitte	Secs. 29 and 30-17s-24e, Jefferson Parish	Absp.	6,500
United Pipe Line Co., Cotton Valley	Sec. 17-21n-10w, Webster Parish	Absp.	20,000
United Gas Pipe Line Co., Taylortown	Webster Parish	Absp.	18,000
United Gas Pipe Line Co., Rodessa	Sec. 14-21n-15w, Caddo Parish	Absp.	140,000
United Gas Pipe Line Co., Sugar Creek†	Sec. 6-19n-5w, Claiborne Parish	Absp.	30,000

*Shut down. †Owned jointly with Sugar Creek Syndicate, Inc., and Carter Oil Co.

MICHIGAN

Grimes, Otha M., Mount Pleasant	Greendale field	C-A	7,500
Grimes, Otha M., Mount Pleasant	Yost field	C-A	7,500
Grimes, Otha M., Temple	Temple	C-A	10,000

MONTANA

Glacier Production Co., Cut Bank	Cut Bank	Absp.	7,000

NEW MEXICO

Continental Oil Co., Hobbs	SE Sec. 19-18s-38e, Lea County	Absp.	25,000
El Paso Natural Gas Co., Jal	Jal	Absp.	50,000
El Paso Nat. Gas Co.-Phillips Pet. Co., Jal	Jal	Absp.	75,000
Phillips Petroleum Co., Eunice	NE Sec. 5-21-36, Lea County	Absp.	77,000
Phillips Petroleum Co., Hobbs	N½ NW Sec. 4-19-38, Lea County	Absp.	40,000
Skelly Oil Co., Eunice	N½ SW Sec. 27-22s-37e, Lea County	Absp.	35,000
Warren Petroleum Corp., Monument	Sec. 36-19s-36e	Absp.	50,000

OHIO

Hope Construction & Refining Co., Ludlow	New Matamoras	Absp.	1,200
Ohio Producing & Refining Co., Doylestown	Sec. 22, Chippewa Twp., Wayne County	Char.	6,000
Pittsburgh Oil & Gas Co., Schley	Archers Fork	Comp.	150
Pittsburg Oil & Gas Co., Sycamore Valley	Sycamore Valley	Comp.	150
Preston Oil Co., Elk	Stock Twp., Noble County	Absp.	2,000
Preston Oil Co., York	York Twp., Medina Co.	Absp.	5,000
Preston Oil Co., Pavonia	Weller Twp., Richland Co.	Absp.	10,000
Preston Oil Co., Sugar Grove	Berne Twp., Fairfield Co.	Absp.	9,000
Preston Oil Co., Homer	Burlington Twp., Licking County	Absp.	15,000
Reno Oil Co., Sistersville, W. Va.	Monroe County	Comp.	100
Tyler Oil Co., Sistersville, W. Va.	Monroe County	Comp.	40

OKLAHOMA

Balco Gasoline Corp., Okemah	Dill pool	Comp.	9,000
Bartlett Gasoline Co., Butler	3 mi. S Butler	Absp.	16,000
Barnsdall Oil Co., Avant	SW NW SE Sec. 18-23-12, Osage County	Absp.	3,000
Barnsdall Oil Co., Turley	SE Sec. 5-20-31, Osage Co.	Absp.	2,000
Barnsdall Oil Co., Earlsboro	NE NE Sec. 15-9-5, Seminole County	Absp.	45,000
Bell Oil & Gas Co., Granfield	Granfield	Absp.	5,000
Ben Franklin Refining Co., Ardmore	Ardmore	Absp.	5,000
Carter Oil Co., Seminole	SE SE Sec. 15-9n-6e	Absp.	60,000
Carter Oil Co., Fittstown	SW SE Sec. 30-2n-7e	Absp.	45,000
Central States Prod. Corp., Wetumka	Sec. 21-9-10, Hughes Co.	Absp.	2,800
Cimarron Gasoline Co., Coyle	Coyle, Pawnee Co.	Absp.	10,000
Cities Service Oil Co., Wanette	NE Sec. 22-6-3, Pottawatomie County	Absp.	7,500
Cities Service Oil Co., Wewoka	NW Sec. 19-7-8, Seminole County	Comp.	6,000
Cities Service Oil Co., Seminole	SE Sec. 24-9-6, Seminole County	Absp.	25,000
Cities Service Oil Co., Konawa	NW Sec. 9-6-6, Seminole County	Absp.	12,000
Cities Service Oil Co., Seminole	SW Sec. 14-8-6, Seminole County	Absp.	25,000
Cities Service Oil Co., Seminole	NE Sec. 11-8-5, Seminole County	Comp.	9,000
Cities Service Oil Co., Sasakwa	SE Sec. 7-6-8, Seminole County	Absp.	25,000
Cities Service Oil Co., Tallant	SE Sec. 35-25-10, Osage County	Absp.	20,000
Continental Oil Co., Billings	SE NW Sec. 21-23n-2w, Noble County	Absp.	20,000
Crosbie, J. E., Inc., Fittstown	Sec. 30-2n-7e, Pontotoc County	Absp.	28,000
Deep Rock Oil Corp., Tulsa	Sec. 9-18-5, Payne Co.	Comp.	1,000
Devonian Oil Co., Kellyville	Sec. 22-17-10, Creek Co.	Absp.	20,000
Eason Oil Co., Enid	SW Sec. 34-17n-4w, Crescent field	Absp.	20,000
Eason Oil Co., Covington	Sec. 24-22-4w	Comp.	2,000
Frame Natural Gasoline Co., Tulsa	Cleveland	Absp.	1,600
Frame Natural Gasoline Co., Tulsa	Cleveland	Comp.	3,200
Grimes, Otha H., and Charles W., Weleetka	Weleetka	Absp.	7,500
Grimes, Otha H., and Charles W., Okemah	Okemah	Absp.	3,000
Grimes, Otha H., and Roy O. Neal, Drumright	Sec. 17-17n-7e	Absp.	4,700
Gulf Oil Corp., Kiefer	Sec. 16-17-12, Creek Co.	Comp.	18,000
Gulf Oil Corp., Tulsa	Sec. 1-21-7, Osage Co.	Comp.	1,800
Gulf Oil Corp., Tulsa	Sec. 24-27-5, Osage Co.	Absp.	10,000
Gulf Oil Corp., Bristow	Sec. 3-14-8, Creek Co.	Absp.	2,000

OKLAHOMA (Continued)

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Gulf Oil Corp., Seminole	Sec. 14-7-6, Seminole Co.	Absp.	13,000
Gulf Oil Corp., Seminole	Sec. 7-8-6, Seminole Co.	Absp.	23,000
Indian Territory Ill. Oil Co., Okla. City	Bodine, SE Sec. 24-11-3, Oklahoma County	Absp.	20,000
Indian Territory Ill. Oil Co., Okla. City	Verne, SE Sec. 13-11-3, Oklahoma County	Absp.	20,000
Indian Territory Ill. Oil Co., Okla. City	Jones, NE Sec. 31-11-2, Oklahoma County	Absp.	20,000
Indian Territory Ill. Oil Co., Okla. City	Lemmon, SE Sec. 11-11-3, Oklahoma County	Absp.	20,000
Knox Refining Co., Garber	Garber field	Comp.	2,000
Lone Star Gas Co., Hollis	4 mi. NW Hollis	Absp.	12,000
Magnolia Petroleum Co., Davenport	Sec. 34-15n-5e, Lincoln County	Absp.	3,700
Magnolia Petroleum Co., Oilton	Sec. 7-18n-7e, Creek Co.	Absp.	9,500
Magnolia Petroleum Co., Graham	Sec. 23-2s-3w, Carter Co.	Absp.	5,000
Magnolia Petroleum Co., Wewoka	Sec. 32-8n-8e, Seminole Co.	Absp.	5,700
Magnolia Petroleum Co., St. Louis	Sec. 15-7n-4e, Pottawatomie County	Absp.	13,000
Magnolia Petroleum Co., Stonewall	Sec. 21-2n-9e, Pontotoc County	Absp.	30,000
McBride, W. C., Inc., Avant	Sec. 18-23-12, Osage Co.	Comp.	1,000
Mid-Continent Petroleum Corp., Bristow	SE SE Sec. 22-17-7	Absp.	20,000
Mid-Continent Petroleum Corp., Leonard	E½ NW Sec. 5-16-15	Comp.	2,500
Mid-Continent Petroleum Corp., Morris	SW Sec. 12-13-13	Absp.	2,500
Mid-Continent Petroleum Corp., Cromwell	NE SW Sec. 15-10-8	Absp.	25,000
Mid-Continent Petroleum Corp., Stillwater	NE Sec. 13-18-1	Absp.	10,000
Neal Gasoline Co., Osage	Sec. 13-21-8	Absp.	4,800
Oklahoma Gasoline Plants, Inc., Drumright	Sec. 18-18-7e, Creek Co.	Absp.	10,000
Oklahoma Utilities Co., Bristow	Sec. 20-16n-9e	Absp.	5,000
Peppers Gasoline Co., Oklahoma City	Lucien field, Noble Co.	Absp.	*15,000
Peppers Gasoline Co., Oklahoma City	Oklahoma City	Absp.	10,000
Peppers Gasoline Co., Oklahoma City	Oklahoma City	Absp.	30,000
Peppers Gasoline Co., Oklahoma City	Oklahoma City	Absp.	5,000
Phillips Petroleum Co., Denoya	NE NE Sec. 26-27-5, Osage County	Absp.	45,000
Phillips Petroleum Co., Edmond	W½ SE Sec. 31-14-3w, Oklahoma County	Absp.	40,000
Phillips Petroleum Co., Eleven-Eleven	SE NW Sec. 24-11-11, Okfuskee County	Absp.	17,000
Phillips Petroleum Co., Lima	NW NW Sec. 23-7-6, Seminole County	Absp.	30,000
Phillips Petroleum Co., Oklahoma City	S½ Sec. 1-11-3, Oklahoma County	Absp.	200,000
Phillips Petroleum Co., Reserve	SE Sec. 16-24-7, Osage County	C-A	35,000
Phillips Petroleum Co., Wewoka	SW NW Sec. 38-8-8, Seminole County	Absp.	30,000
Phillips Petroleum Co., Wetumka	N½ NW Sec. 3-9-9, Hughes County	Absp.	20,000
Pioneer Corp., Bixby	Bixby	Comp.	2,500
Powers, M. F., Depew	Sec. 8-15n-8e, Creek Co.	Absp.	3,500
Pure Oil Co., Drumright	Sec. 32-18n-7e	Comp.	12,000
Pure Oil Co., Seminole	Sec. 26-9n-6e	Comp.	23,000
Shell Oil Co., Inc., Wolco	E½ Sec. 24-24n-11e	Absp.	10,000
Shell Oil Co., Inc., Orlando‖	SW Sec. 17-20n-2w	Absp.	36,000
Shell Oil Co., Inc., Wilson†	NE Sec. 8-4s-3w	Absp.	10,000
Shell Oil Co., Inc., Tonkawa‡	SW Sec. 21-29n-1w	Absp.	6,000
Shell Oil Co., Inc., Tonkawa‡	NE Sec. 2-24n-1w	Absp.	10,000
Shell Oil Co., Inc., Wilson	SW Sec. 22-4s-2w	Absp.	16,000
Sinclair Prairie Oil Co., Drumright	SW SW Sec. 28-18-7	Absp.	25,000
Sinclair Prairie Oil Co., Shamrock	SW SE Sec. 28-17-7	Comp.	16,400
Sinclair Prairie Oil Co., Covington	W½ SW Sec. 19-22-3	Absp.	15,000
Sinclair Prairie Oil Co., Shidler	SW SE Sec. 29-27-6	Absp.	15,000
Sinclair Prairie Oil Co., Seminole	NW NW Sec. 35-9-6	Absp.	50,000
Sinclair Prairie Oil Co., Seminole	SW NE Sec. 10-8-6	Absp.	50,000
Sinclair Prairie Oil Co., St. Louis	SW Sec. 27-7-4	Absp.	80,000
Sinclair Prairie Oil Co., Oklahoma City	SE NW Sec. 30-11-2	Absp.	36,000
Skelly Oil Co., Rt. 2, Fairfax No. 1	S½ NW Sec. 10-25n-6e, Osage County	Absp.	45,000
Skelly Oil Co., Rt. 2, Fairfax No. 2	N½ SW Sec. 3-25n-6e, Osage County	Absp.	21,000
Skelly Oil Co., Lyman	SW Sec. 23-27n-5e, Osage County	Comp.	24,000
Skelly Oil Co., Carter Nine	NW NW Sec. 9-26n-6e, Osage County (2 plants)	Absp.	55,000
Skelly Oil Co., Box 413, Wynona	SW Sec. 24-24n-9e, Osage County	Absp.	8,000
Surber, W. M., Sapulpa	Sapulpa	Absp.	5,000
Texas Co., (Del.), Blackbird	NE Sec. 30-25n-8e, Osage County	Absp.	4,600
Texas Co. (Del.), Davenport	SE SE Sec. 2-14n-5e, Lincoln County	Absp.	9,500
Texas Co. (Del.), Moore	W½ NW Sec. 8-17n-12e, Creek County	Comp.	14,750
Tide Water Associated Oil Co., Drumright	Drumright	Absp.	15,000
United Carbon Co. (Westoak), Sayre	Sec. 2-19n-23w, Beckham County	Absp.	15,000
Victor Gasoline Corp., Bristow	Sec. 27-16-9e	Absp.	5,000
Victor Gasoline Corp., Stroud	Sec. 6-15-7e	Absp.	2,500
Warren Petroleum Corp., Maud	Maud	Absp.	20,000
Warren Petroleum Corp., Graham	Carter County	Absp.	15,000
Wright, Rosa B., Sapulpa	Kellyville	Absp.	5,000
Yale Gasoline Co., Yale	Sec. 13-19n-5e, Payne County	C-A	1,500

*Shut down. †Carter Oil Co. is nonoperating partner. ‡Continental Oil Co. is nonoperating partner. ‖Jointly owned with seven nonoperating partners.

PENNSYLVANIA

Alum Rock Gas Co., Port Allegany	Fern, Clarion County	Comp.	500
Bayliss & Bayliss, Titusville	Titusville, 2 mi S	Comp.	10,000
Carpenter, M. A., Karns City	Fairview Twp.	Absp.	200
Carnegie Natural Gas Co., Lone Pine	Washington Co.	Absp.	1,000
Clinger Oil & Gas Co., Tidioute	Fagundus, Triumph Twp., Warren Co.	Comp.	1,000
Clinger Oil & Gas Co., Tidioute	Hastings, Howe Twp., Forest Co.	Comp.	1,000
Cochran, John G., & Co., Sheffield	Lot 438, Sheffield Twp.	Absp.	1,100
Columbia Gas & Electric Corp., Kane	Kane	Absp.	*7,000
Columbia Gas & Electric Corp., W. Finley	West Finley	Absp.	5,000
Columbia Gas & Electric Corp., Majorsville, W. Va.	Majorsville	Absp.	10,000
Columbia Gas & Electric Corp., Waynesburg	Waynesburg	Absp.	*10,000
Cook Oil Lease, Mayburg	Forest Co.	Comp.	150
Crawford & Gregory, Emlenton	Fryburg, 6 mi. N	Comp.	500
Dempseytown Gas Co., Port Allegany	Clarion Co.	Comp.	1,000
Edwards, E. A., Titusville	Titusville	Comp.	170
Ellenburger, W. J., & Sons, Karns City	Karns City	Comp.	300
Elliott Brothers, Chicora	Chicora	Comp.	500
Equitable Gas Co., Rogersville	Center Twp., Greene Co.	Absp.	10,000
Equitable Gas Co., Clarksville	Deemston Twp., Washington Co.	Absp.	2,000
Fleming, J. E., Grand Valley	Grand Valley	Comp.	100
Forest Chemical Co., Sheffield	Sheffield Twp.	Absp.	*300

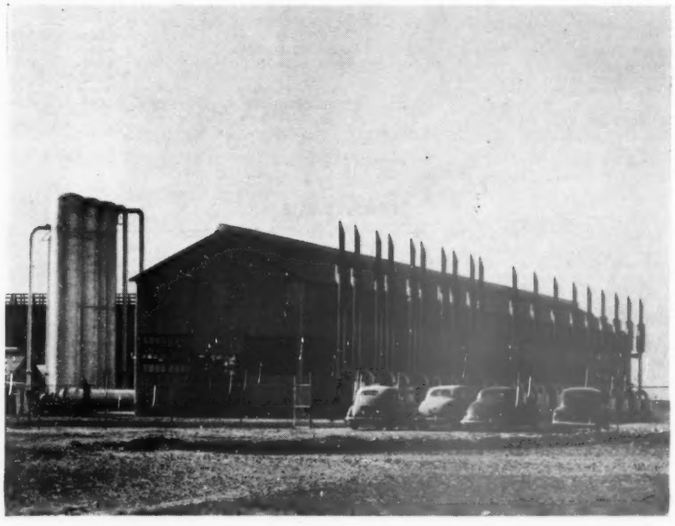
PENNSYLVANIA (Continued)

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Harvey, John J., Estate, Titusville	Pleasantville	Absp.	500
Haskell, Roth & Bayliss, Tidioute	Triumph Twp., Warren Co.	Comp.	10,000
Hickey & Russell, Clarendon	Henry's Mill	Comp.	*300
Hope Construction & Refining Co., Brave	Brave	Absp.	20,000
Hope Construction & Refining Co., Imperial	Imperial	Char.	*3,600
Jennings, E. H., Bros. Co., Pittsburgh	Oakdale, Allegheny Co., (3 plants)	Comp.	1,500
Kapp & Brochlehurst, Tidioute	Tidioute	Vac.	100
Mars Co., Oil City	Pinegrove Twp., Venango County	Absp.	4,000
Mars Co., Lewis Run	Lewis Run	Absp.	6,500
Mars Co., Van	Van	Absp.	7,500
Mars Co., Clarion	Paint Twp., Clarion Co.	Absp.	*1,800
Mars Co., East Hickory	Hickory Twp., Forest Co.	Absp.	*1,500
Moore, Way & Harrison, Titusville	Titusville	Comp.	100
Pennsylvania Oil Co., Ludlow	Ludlow	Absp.	10,000
Pittsburgh Oil & Gas Co., Pittsburgh	Clarion	Comp.	150
Pittsburgh Oil & Gas Co., Pittsburgh	Miola	Comp.	150
Pittsburgh Oil & Gas Co., Pittsburgh	Fairview Twp., Butler Co.	Comp.	50
Red Brush Oil Co., Tidioute	Near Tionesta	Comp.	300
Sand Hill Lease, Tidioute	Tidioute	Comp.	100
Say, George K., Estate, Karns City	Perry Twp., Armstrong Co.	Comp.	35
Sloan & Zook Co., Kane	McKean Co.	Absp.	1,500
South Penn Oil Co., Pittsburgh	Kane	Comp.	100
South Penn Oil Co., Pittsburgh	President	Comp.	500
South Penn Oil Co., Pittsburgh	South Heights	Comp.	550
South Penn Oil Co., Pittsburgh	Bradford	Comp.	550
South Penn Oil Co., Pittsburgh	Chicora	Comp.	150
South Penn Oil Co., Pittsburgh	Chaffee	Comp.	25
South Penn Oil Co., Pittsburgh	Parker	Comp.	100
South Penn Oil Co., Pittsburgh	New Freeport	Absp.	1,000
South Penn Oil Co., Pittsburgh	Guffey	Comp.	*150
South Penn Oil Co., Pittsburgh	Washington	Comp.	100
South Penn Oil Co., Pittsburgh	Taylorstown	Comp.	100
South Penn Oil Co., Pittsburgh	Evans City	Comp.	150
South Penn Oil Co., Pittsburgh	Pleasantville	Comp.	300
South Penn Oil Co., Pittsburgh	Porcupine	Comp.	650
South Penn Oil Co., Pittsburgh	Pleasantville	Comp.	*100
South Penn Oil Co., Pittsburgh	Sturgeon	Comp.	1,500
South Penn Oil Co., Pittsburgh	Evans City	Comp.	25
South Penn Oil Co., Pittsburgh	Tiona	Comp.	450
South Penn Oil Co., Pittsburgh	Henry's Mills	Comp.	300
South Penn Oil Co., Pittsburgh	Hooker	Comp.	100
South Penn Oil Co., Pittsburgh	Noblestown (2 plants)	Comp.	1,725
Surety Oil Co., Titusville	Titusville	Comp.	1,000
Thomas, R. L., Tidioute	Triumph Twp., Warren Co.	Vac.	200
Tompsett Bros., Tidioute	Triumph Twp., Warren Co.	Vac.	500
Triangle Co., McKees Rocks	Coraopolis	Comp.	100
Triumph Petroleum Co., Tidioute	2 mi. W Tidioute, Warren County	Comp.	150
Wahl, A. R., Evans City	Foward Twp.	Comp.	165
Warner-Caldwell Oil Co., Titusville	2 mi. N Titusville	Comp.	1,000

*Shut down.

TEXAS

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Agua Dulce Co., Robstown	Banquette	Absp.	45,000
Anzac Oil Corp., Coleman	M. T. Overall Lse., C.H.&H. R.R. Sur. 12, Blk. 1, Coleman Co.	Comp.	600
Arab Gasoline Corp., Eastland	Eastland-Ranger dist.	Absp.	25,000
Arkansas Fuel Oil Co., Longview	Smith Lse., Castleberry heirs, Gregg Co.	Absp.	40,000
Arkansas Fuel Oil Co., Jefferson	Bayless Lse., Hanks heirs, Marion Co.	Absp.	38,000
Arkansas Fuel Oil Co., Jefferson	Moseley Lse., Marion Co.	Absp.	*11,000
Arkansas Fuel Oil Co., Waskom	Abney Lse., Harrison Co.	Absp.	20,000
B-W Gasoline Co., Livingston	Schwab field, Polk Co.	Absp.	4,000
Barnsdall Oil Co., Odessa	SW Sec. 18-42-2s, Ector Co.	Absp.	25,000
Bell Oil & Gas Co., Burkburnett	Burkburnett	Comp.	5,000
Big Lake Oil Co., Texon	Sec. 2, Blk. 2, Reagan Co.	Absp.	50,000
Buckeye Natural Gasoline Corp., Magic City	Magic City	Absp.	15,000
Cabot Carbon Co., Wickett	S½ NE Sec. 3, Univ. Ld., Blk. 16, Ward Co.	Comp.	35,000
Cabot Carbon Co., Kermit	S½ NE Sec. 3, Pubic Sc. Ld., Blk B-3, Winkler Co.	Absp.	15,000
Cabot Carbon Co., Kermit	Winkler Co. (Walton)	Absp.	40,000
Canadian River Gas Co., Channing	Bivin Sta., Moore Co.	Absp.	30,000
Cannon Gasoline Co., Amarillo	2 mi. N Amarillo	Comp.	6,000



Compressor building and absorbers at the El Paso Natural Gas Co.-Phillips Petroleum Co. 75,000-gal. plant built at Jal, N. M., last year

TEXAS (Continued)

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Cities Service Oil Co., Odessa	SE SE Sec 34, Blk 43, T. 1n., Ector Co.	Absp.	35,000
Cities Service Oil Co., Pampa	N½ Sec. 136, Blk 3, I&G.N. Sur., Gray Co.	Absp.	30,000
Clymore Co., Inc., Refugio	Refugio	Absp.	30,000
Coltexo Corp., Lefors	Gray Co.	Absp.	40,000
Columbian Gasoline Corp., Shamrock	Shamrock	Absp.	10,000
Consolidated Gasoline Co., Cisco	1 mi. S Eastland	Absp.	10,000
Continental Oil Co., K.M.A. plant, Electra	Wichita Co.	Comp.	70,000
Cosden Petroleum Corp., Graham	3 mi. SE Graham, Young Co.	Absp.	5,000
Danciger Oil & Refineries, Inc., Danciger	Danciger	Absp.	40,000
Danciger Oil & Refineries, Inc., Lefors	Lefors	Absp.	20,000
Deep Oil Development Co., Wichita Falls	6 mi. N Archer City, Archer Co.	Comp.	4,000
Deep Oil Development Co., Wichita Falls	1 mi. N of Kamay, Wichita Co.	Comp.	4,800
Del Rey Petroleum Co., Hardin	Liberty Co.	Absp.	10,000
Desdemona Gasoline Co. of Texas, Desdemona	Eastland Co.	Absp.	3,000
Duval Gasoline Co., Benavides	Duval Co.	Absp.	20,000
General American Oil Co., Dallas	Gladewater	Comp.	20,000
Gregg-Tex Gasoline Corp., Longview	10 mi. from Longview	Comp.	100,000
Gulf Refining Co., Monahans	Ward Co.	Absp.	30,000
Gulf Refining Co., Overton	Overton	Comp.	15,000
Hagy, Harrington & Marsh, White Deer	White Deer, Carson Co.	Absp.	50,000
Hamman Exploration Co., Bay City	Hamman field	Absp.	12,000
Hanlon Gasoline Co., Tulsa	2 mi. S Breckenridge	Absp.	50,000
Hanlon Gasoline Corp. of Texas, Tulsa	4 mi. NE Gladewater	Comp.	150,000
Henderson, F. C., and E. P., Sanford	Hutchinson Co.	Absp.	60,000
Hercules Gasoline Co., Kilgore	Mary Van Winkle Sur., SE portion of 93.5-ac., Gregg Co.	C-A	50,000
Huber Corp., J. M., Borger	Sec. 28, A.&B. Sur., Hutchinson Co.	Absp.	30,000
Humble Oil & Ref. Co., Overton	4 mi. NE Overton	V.R.	31,000
Humble Oil & Ref. Co., Conroe	5½ mi. SE Conroe	C-A	18,000
Humble Oil & Ref. Co., Dickinson	2½ mi. E Dickson	A	11,000
Humble Oil & Ref Co., Corpus Christi	Flour Bluff, 12 mi. SE Corpus Christi	C-A	14,000
Humble Oil & Ref. Co., Bloomington	Heyser, 3 mi. SE Bloomington	A	11,000
Humble Oil & Ref. Co., Overton	East Texas, 2½ mi. SE Kilgore	C-A	28,000
Humble Oil & Ref. Co., Overton	East Texas, 3 mi. SE Overton	C-A	40,000
Humble Oil & Ref. Co., Bellville	Raccoon Bend, 8 mi. SW Bellville	C-A	*7,000
Humble Oil & Ref. Co., Tomball, Tex.	Tomball, 2 mi. SW Tomball	C-A	22,000
Knox Refining Co., Knox	8 mi. NE Graham	Comp.	2,500
La Salle Petroleum Co., Burkburnett	Burkburnett	Comp.	*5,000
Lesh & McCall, Wichita Falls	½ mi. NW Nacona, Montague Co.	Absp.	5,000
Lisbon Gasoline Co., Inc., Henderson	Brown Sur., W. T. Grissom Lse., Rusk Co.	Absp.	50,000
Lone Star Gas Co., Sipe Springs	8 mi. from Rising Star	Comp.	1,000
Lone Star Gas Co., Gordon	2 mi. E Gordon	Absp.	15,000
Lone Star Gas Co., Pueblo	7 mi. SE Moran	Absp	5,000
Lone Star Gas Co., Petrolia	3 mi. S Petrolia	Absp.	5,000
Lone Star Gas Co., Trinidad	2 mi. SE Trinidad	Absp.	30,000
Lone Star Gasoline Co., Ranger	Ranger (two plants)	Absp.	30,000
Lone Star Gasoline Co., Eastland	Eastland	Absp.	6,000
Lone Star Gasoline Co., Breckenridge	Breckenridge	Absp.	30,000
Magnolia Petroleum Co., Electra	Sec. 17, Blk. 13, H.&H.C. Sur., Wilbarger Co.	Comp.	4,500
Magnolia Petroleum Co., Burkburnett	Wm. Dubose Sur., Wichita Co.	Comp.	4,000
Magnolia Petroleum Co., Olden	Matt. Finch Sur., Eastland Co.	Absp.	9,000
Magnolia Petroleum Co., Desdemona	Smelzer Sur., Eastland Co.	Absp.	7,500
Magnolia Petroleum Co., Kings Mill	Gray Co.	Absp.	9,000
Magnolia Petroleum Co., Sunray	Moore Co.	Absp.	20,000
Magnolia Petroleum Co., Kermit	Winkler Co.	Absp.	18,000
Manhattan Gasoline Co., Sinton	Sinton	Absp.	25,000
Mid-Co Oil & Ref. Co., Corsicana	Cayuga field, Henderson Co.	Absp.	10,000
Midland Gasoline Co., The, Conroe	Montgomery Co.	Absp.	30,000
Nash Gasoline Co., Graham	Peters plant	Absp.	8,000
Natural Gasoline Corp., Aransas Pass	Aransas Co.	Absp.	50,000
Nine Oaks Gasoline Corp., Electra	Gladewater	Comp.	3,000
Panhandle Refining Co., Wichita Falls	Bryson	Comp.	1,000
Parade Gasoline Co., Inc., Overton	Joiner area, Rusk Co.	C-A	95,000
Phillips Petroleum Co., Bowers	W½ Sec. 62, H.&G.N. Sur., Blk. B-2, Gray Co.	Absp.	50,000
Phillips Petroleum Co., Canadian	NW SE Sec. 1, Blk X02, Hutchinson Co.	Absp.	20,000
Phillips Petroleum Co., Carson	W C Sec. 115, I.&G.N. Sur., Blk. 5, Carson Co.	Absp.	20,000
Phillips Petroleum Co., Eliasville	6.88-ac., N½ Sur. 1174, T.E.&L. Sur., Stephens Co.	Absp.	12,000
Phillips Petroleum Co., Goldsmith	SE¼ Sec. 33, Blk. 44, Twp. 1n, T.&P. Sur., Public Sc. Lds., Ector Co.	Absp.	35,000
Phillips Petroleum Co., Gray	E½ Sec. 32, H.&G.N. Sur., Blk. 2, Gray Co.	Absp.	100,000
Phillips Petroleum Co., Frankell	5 ac., SE SW, Sec. 51, T.&P. Sur., Blk. 6, Stephens Co.	Absp.	8,500
Phillips Petroleum Co., Ibex	NW¼ Sec. 28, B.A.L., Shackelford Co.	Absp.	12,000
Phillips Petroleum Co., Johnson	Cen. 60 ac., S½ Sec. 69, Blk. 46, H.&T.C. Sur., Hutchinson Co.	Absp.	50,000
Phillips Petroleum Co., Judkins	West 60 ac., N½ S½ Sec. 1, Univ. Ld., Blk 35, Ector Co.	Absp.	40,000
Phillips Petroleum Co., Lefors	NE NE Sec. 56, Blk. 25 H.&G.N. Sur., Gray Co.	Absp.	15,000
Phillips Petroleum Co., Lodi	NE cor. Wm. R. Myers Sur., Cass Co.	Absp.	40,000
Phillips Petroleum Co., Mankins	E 60 ac. of S 120 ac., Blk. 38, Chas. A. Mangold subd. of Lazuras ranch, P. Castleman Sur., Wichita Co.	C-A	18,000
Phillips Petroleum Co., McCamey	NE NE Sec. 216, C.C.S.D.& R.G.N.G. Sur., Blk. F, Crane Co.	Absp.	30,000
Phillips Petroleum Co., North	SW Sec. 35 & NW Sec. 36, I.&G.N. Sur., Blk. 3, Gray Co.	Absp.	50,000
Phillips Petroleum Co., Pampa	W½ SW Sec. 88, H.&G.N. Sur., Blk. B-2, Gray Co.	Absp.	60,000
Phillips Petroleum Co., Panhandle	SW¼ Sec. 113, I.&G.N.R.R. Sur., Blk. 5, Carson Co.	Absp.	15,000
Phillips Petroleum Co., Pantex	SE cor. Mary Whitley Sur., Blk. 8, Hutchinson Co.	Absp.	50,000

FISHER

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Here is further proof that Fisher Governor Company is keeping abreast of the industry's requirements by maintaining engineering and production departments that are constantly alert to new developments and resultant automatic control needs.

This 8" Type 57T Diaphragm Control Valve . . . . the largest of its kind ever built . . . . and three others like it were recently shipped to Southern Texas and Louisiana for shut-off and throttling control on the main gas supply lines to recycling plants.

LARGEST VALVE OF ITS TYPE EVER BUILT

Specifications!

Series 1500 WCB Cast Steel Body, single or double ported . . . . ring joint or other types of flanges . . . high pressure bolted gland stuffing box with stem lubricator and isolating valve . . . extra large stainless steel valve stem with cast bronze connector and travel indicator . . . . heavy high-tensile iron yoke and diaphragm casing . . . multiple springs . . . . large diaphragm area to insure ample power for accurate control . . . nichrome steel flange studs, instrument checked to insure safe and uniform bolting stresses . . . . can be furnished with stem back seated below the stuffing box . . . equipped for easy mounting of valve positioner.

EVERY PART ACCURATELY DESIGNED FOR HIGH PRESSURE OPERATING CONDITIONS!

FISHER GOVERNOR COMPANY

• 226 FISHER BUILDING •

MARSHALLTOWN, IOWA

TEXAS (Continued)

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Phillips Petroleum Co., Pioneer	W C part W. A. Eaken 132-ac. tr., Eastland Co.	Absp.	15,000
Phillips Petroleum Co., Ray	C W½ Sec. 164, T.&N.O.R. R. Sur., Blk. 3-T Moore Co.	Absp.	10,000
Phillips Petroleum Co., Rock Creek	N NW Sec. 22, Blk Y, A. &B. Sur., Hutchinson Co.	Absp.	60,000
Phillips Petroleum Co., South Bend	20 ac., N C J. Garrett Sur., A-108, Young Co.	Absp.	9,000
Phillips Petroleum Co., Sanford	Sec. 81, Blk. 46, H.&T.C.R. R. Sur., Hutchinson Co.	Absp.	34,000
Phillips Petroleum Co., Texroy	SE Sec. 3, Blk. B-3, D.&S. E.R.R. Sur., Hutchinson Co.	Absp.	50,000
Portland Gasoline Co., Pampa	SW Sec. 163, Blk. 3, L.& G.N.R.R. Sur., Gray Co.	C-A	30,000
Pure Oil Co., Van	Van Zandt Co.	C-A	45,000
Rhodes Pool Gasoline Co., Bryson	Jack Co.	Comp.	3,000
Roeser & Pendleton, Inc., Albany	Cook field, Shackelford Co.	Absp.	30,000
Roeser & Pendleton, Inc., Albany	Bluff Creek field, Shackelford Co.	Absp	4,000
Rudco Oil & Gas Co., Desdemona	Desdemona	Comp.	5,500
Rudco Oil & Gas Co., Rising Star	Blake	Comp.	7,000
Sabine Valley Gasoline Co., Inc., Longview	Mary Scott Sur., Gregg Co.	V.R.	60,000
Shamrock Oil & Gas Corp., Sunray	Sec. 399, Blk. 44, H.&T.C. R.R. Sur., Moore Co.	Absp.	90,000
Shell Oil Co., Inc., Skellytown	SE Sec. 107, Blk. 4, I.& G.N. Sur.	Absp.	25,000
Shell Oil Co., Inc., Skellytown	SW Sec. 113, Blk. 4, I.&G.N. Sur.	Absp.	5,000
Shell Oil Co., Inc., Pampa	SW Sec. 83, Blk. 3, I.&G. N. Sur.	Absp.	15,000
Shell Oil Co., Inc., Denver City†	NE Sec. 892, Blk. D, Gibson Sur.	C-A	60,000
Sinclair Prairie Oil Co., Longview	J. Moseley Sur., Boston Moore 140 ac.	Absp.	80,000
Sinclair Prairie Oil Co., Arp.	Florence Wilson Lse., R. McAnulty Sur.	Absp.	80,000
Sinclair Prairie Oil Co., Taft	Taft	Absp.	15,000
Skelly Oil Co., Stinnett	NW Joseph W. Proctor Sur., Hutchinson Co.	Absp.	15,000
Skelly Oil Co., Burkburnett	Burkburnett townsite, Wichita Co.	Comp.	12,000
Skelly Oil Co., Burkburnett	H.T.&B.R.R. Sur., A-124, Wichita Co.	Comp.	800
Skelly Oil Co., Skellytown	SE SE Sec. 124, Blk. 4, I.&G.N.R.R. Co., Sur., Carson Co.	Absp.	32,000
Skelly Oil Co., Skellytown	S½ Sec. 88, Blk. 4, I.&G.N. R.R. Sur., Carson Co.	Absp.	50,000
Skelly Oil Co., Skellytown	NE Sec. 13, Blk.M-21, T. C. Ry. Sur., Hutchinson Co.	Absp.	30,000

TEXAS (Continued)

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Skelly Oil Co., Skellytown	NE Sec. 174, Blk. 3, I.& G.N. Sur., Gray Co.	Absp.	40,000
Smith Bros. Ref. Co., McLean	McLean	C-A	40,000
Southern Minerals Corp., Corpus Christi	Sur. 406, Saxet field	A	60,000
Standard Oil Co. of Texas, Royalty	Sec. 10, Blk. 34, Ward Co.	C-A	35,000
Stanolind Oil & Gas Co., Bishop	Luby field	Absp.	30,000
Texas Co. (Delaware), Burkburnett	Jackson Haden Sur., A-90, Wichita Co.	Comp.	12,900
Texas Co. (Delaware), Electra	H.&G.N. Sur., A-654, Wichita Co.	Comp.	12,950
Texas Co. (Delaware), Johnson	S.P.R.R. Sur., Sec. 26, Blk. L, Foard Co.	Absp.	3,250
Texas Pacific Coal & Oil Co., Fort Worth	Caddo	Absp.	20,000
Texas Pacific Coal & Oil Co., Fort Worth	Strawn	Absp.	5,000
Texoma Natural Gas Co., Fritch	Sec. 5, Blk Y-2, T.T.R.R. Sur., Hutchinson Co.	Absp.	85,000
Tucker Oil Co., Wichita Falls	Blk. 83, R.R. V. Lds. Sur., Wichita Co.	Comp.	5,000
United Gas Pipe Line Co., Latex	Jane Thorpe Sur., Panola Co.	Absp.	8,000
United Gas Pipe Line Co., Agua Dulce	Ross Peters subd. No. 2, Andres Fernandez de la Fuente gr., Nueces Co.	Absp.	45,000
United Gas Pipe Line Co., Refugio	Sec. 6, Lot 2, Refugio town tr., Refugio Co.	Absp.	25,000
Waggoner, W. T., Estate, Vernon	12 mi. S Vernon	Absp.	7,000
Warren Petroleum Corp., Fairbanks	Harris Co.	Absp.	30,000
West Texas Gas Co., Fritch	Sec. 45, Blk. 2, A.B.&M. Sur., Potter Co.	Absp.	25,000

*Shut down. †Coltexo Corp. owns one-half interest.

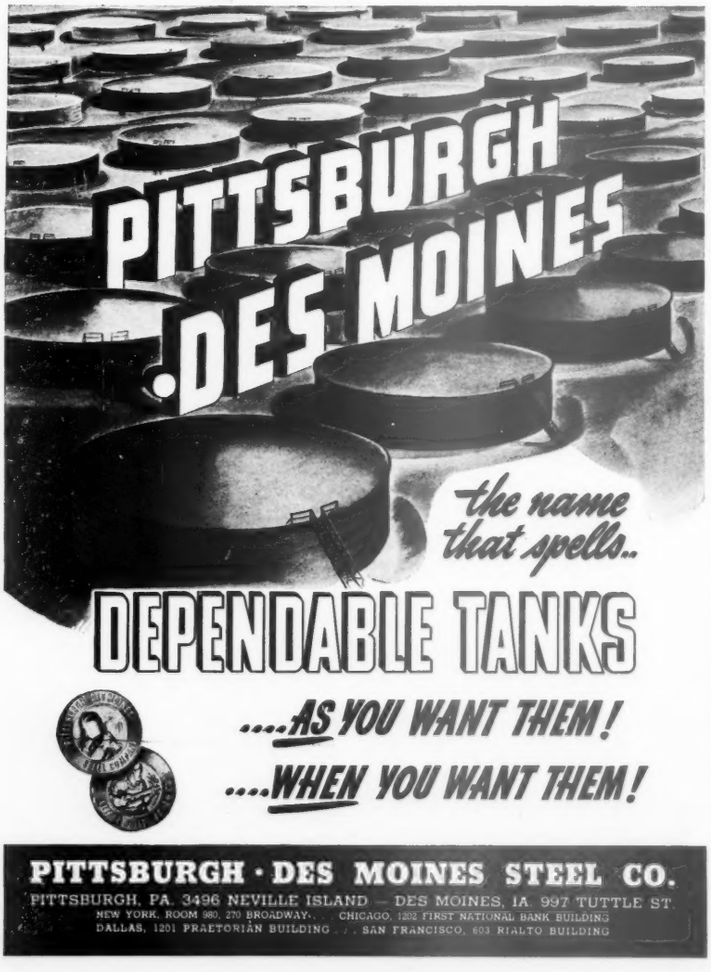
WEST VIRGINIA

Blue Creek Oil & Gas Co., Charleston	Blue Creek	Comp.	*3,500
Carbide & Carbon Chemical Corp., Diamond	Diamond	Comp.	3,000
Carbide & Carbon Chemical Corp., Hastings	Hastings	Comp.	2,000
Carnegie Natural Gas Co., Hundred	Hundred	Absp.	3,300
Carnegie Natural Gas Co., Underwood	Underwood	Absp.	3,000
Carnegie Natural Gas Co., Pine Grove	Pine Grove	Absp.	*3,000
Carnegie Natural Gas Co., Toll Gate	Toll Gate	Absp.	100
Dinsmoor & Co., St. Marys	Pleasants County	Comp.	500
Dun Mar Oil & Gas Co., Fairview	Jarke Run	Comp.	400
Falling Rock Cannel Coal Co., Falling Rock	Falling Rock	Absp.	3,000
Hapgood, Roswell T., & Co., Charleston	Cedar Grove	Char.	6,500
Henaghan & Hanlon, Inc., Sistersville	Harrisville (2 plants)	Comp.	1,000
Henaghan & Hanlon, Inc., Sistersville	Hebron	Comp.	1,000
Henaghan & Hanlon, Inc., Sistersville	Highland	Comp.	2,000
Henaghan & Hanlon, Inc., Sistersville	Highland	Comp.	2,000
Henaghan & Hanlon, Inc., Sistersville	Pike	Comp.	1,500
Henaghan & Hanlon, Inc., Sistersville	Pike	Comp.	3,700
Henaghan & Hanlon, Inc., Sistersville	Rock Run	Comp.	1,000
Henaghan & Hanlon, Inc., Sistersville	West Union	Comp.	500
Hope Construction & Refining Co., Cornwell	Cornwell	Absp.	12,000
Hope Construction & Refining Co., Bristol	Bristol	Absp.	8,000
Hope Construction & Refining Co., Goff	Mount Clair	Absp.	2,500
Hope Construction & Refining Co., Hastings	Pine Grove	Absp.	40,000
Hope Construction & Refining Co., Salem	Salem	Absp.	*4,000
Hope Construction & Refining Co., Waverly	Waverly	Absp.	5,000
Hope Construction & Refining Co., Kennedy	Valley Chapel	Absp.	20,000
Jennings, E. H., Bros. Co., Pittsburgh, Pa.	Jacksonburg (2 plants)	Comp.	1,500
Melrose Oil & Gas Co., Sistersville	Gorrell Farm., Middlebourne	Comp.	100
Oil & Gas Co., Parkersburg	Ritchie County	Comp.	250
Owens, Libby-Owens, Gas Dept., Charleston	South Malden	Absp.	10,000
Pittsburgh Oil & Gas Co., Pittsburgh, Pa.	R. D., Sistersville	Comp.	150
Pittsburgh Oil & Gas Co., Pittsburgh, Pa.	Macfarlan	Absp.	1,000
Pure Oil Co., Dawes	Cabin Creek	C-A	12,000
Reno Oil Co., Sistersville	Ritchie County	Comp.	1,500
Reno Oil Co., Sistersville	Tyler County	Comp.	200
South Penn Oil Co., Pittsburgh, Pa.	Coco	Comp.	2,200
South Penn Oil Co., Pittsburgh, Pa.	Glenville	Comp.	1,100
South Penn Oil Co., Pittsburgh, Pa.	Liverpool	Comp.	1,000
South Penn Oil Co., Pittsburgh, Pa.	Mannington	Absp.	1,500
South Penn Oil Co., Pittsburgh, Pa.	Bula	Comp.	200
South Penn Oil Co., Pittsburgh, Pa.	Aloy	Comp.	1,400
South Penn Oil Co., Pittsburgh, Pa.	Bulls Mills	Comp.	700
South Penn Oil Co., Pittsburgh, Pa.	Spencer	Comp.	2,600
South Penn Oil Co., Pittsburgh, Pa.	Walton	Comp.	2,400
South Penn Oil Co., Pittsburgh, Pa.	Fink	Comp.	1,000
South Penn Oil Co., Pittsburgh, Pa.	Yawkey	Comp.	3,000
South Penn Oil Co., Pittsburgh, Pa.	Macfarlan	Comp.	2,000
South Penn Oil Co., Pittsburgh, Pa.	Wolf Summit	Comp.	2,000
South Penn Oil Co., Pittsburgh, Pa.	Metz	Comp.	1,500
South Penn Oil Co., Pittsburgh, Pa.	Smithfield	Comp.	3,000
South Penn Oil Co., Pittsburgh, Pa.	Statler Run	Comp.	2,200
South Penn Oil Co., Pittsburgh, Pa.	Pine Grove	Comp.	2,500
South Penn Oil Co., Pittsburgh, Pa.	Ashley	Comp.	250
South Penn Oil Co., Pittsburgh, Pa.	Clay Court House	Comp.	2,200
South Penn Oil Co., Pittsburgh, Pa.	Shirley (2 plants)	Comp.	1,600
South Penn Oil Co., Pittsburgh, Pa.	Shinnston	Comp.	400
South Penn Oil Co., Pittsburgh, Pa.	Blue Creek (2 plants)	Comp.	4,700
Tyler Oil Co., Sistersville	Tyler County (3 plants)	Comp.	110
Union Gasoline & Oil Corp., Moundsville	Marshall County	Absp.	3,000
Union Gasoline & Oil Corp., Porter Falls	Wetzel County	Absp.	10,000
Union Gasoline & Oil Corp., Jane Lew	Lewis County	Absp.	3,000
Virginia Gasoline & Oil Co., Walgrove	Kanawha County	Absp.	*1,000
Virginia Gasoline & Oil Co., Clendenin	Kanawha County	Absp.	40,000
Virginia Gasoline & Oil Co., Charleston	Kanawha County	Absp.	15,000
Virginia Gasoline & Oil Co., St. Albans	Kanawha County	Char.	3,500
Virginia Gasoline & Oil Co., Hubball	Lincoln County	Char.	12,000
Virginia Gasoline & Oil Co., Jarrets Ford	Kanawha County	Absp.	1,500
Virginia Gasoline & Oil Co., Mammoth	Kanawha County	Absp.	2,500
Virginia Gasoline & Oil Co., Ona	Cabell County	Absp.	18,000
Virginia Gasoline & Oil Co., Sandyville	Jackson County	Char.	20,000
Virginia Gasoline & Oil Co., Three Mile	Kanawha County	Absp.	3,500
Virginia Gasoline & Oil Co., Charleston	Kanawha County	Char.	*7,000
Virginia Gasoline & Oil Co., Spencer	Roane County	Char.	*12,000
Virginia Gasoline & Oil Co., Fort Gay	Wayne County	Char.	*3,500

*Shut down.

WYOMING

Continental Oil Co., Lance Creek	SE Sec. 31-36n-65w, Niobrara Co.	Absp.	25,000
Northern Utilities Co., Riverton	Riverton	Absp.	4,500
Ohio Oil Co., Rocky River	Carbon Co.	Absp.	5,000
Ohio Oil Co., Kirby	Hot Springs Co.	Comp.	3,000
Sinclair Wyoming Oil Co., Bairoil	NE Sec. 10-26n-90w	Comp.	5,000
Sinclair Wyoming Oil Co., Columbine	NE NE Sec. 13-39n-79w	Absp.	5,000
Stanolind Oil & Gas Co., Midwest	Salt Creek field	Comp.	90,000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R. J. Wysor
PRESIDENT

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Republic's huge electric weld pipe mills make line pipe sufficiently fast to meet your most urgent construction schedules. But speedy service is only one of many advantages you enjoy when you use Republic Electric Weld Line Pipe.

It comes in long lengths that reduce the number of welds and speed construction of the line. Its perfect roundness and uniform wall thickness facilitate welding and produce better joints. Its superior physical properties make bending less of a task and provide greater strength for creek crossings and suspended lines. Finally, absolute freedom from scale inside and outside eliminates the danger of clogged valves and contamination of fluids carried.

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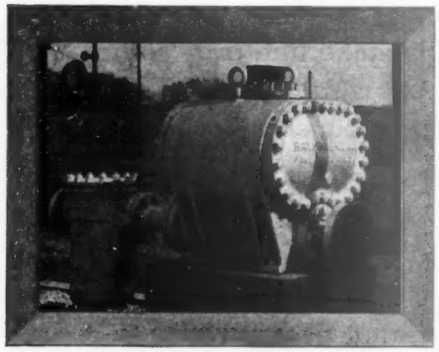

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Pipe-Line Activity

Standard Oil Co. (Indiana) Prepares To Extend Gasoline Lines 282 Miles

Specifications have been issued for the construction of two lines which will serve as extensions to the present 8-in. gasoline trunk line from Sugar Creek Mo., to Council Bluffs, Iowa. One of these lines will be 171 miles of 6-in. from Council Bluffs to Sioux Falls, S. D. The other will be a branch extending to Des Moines, Iowa, which will consist of 111 miles of 6-in. Bids will be received at the end of this week and it is expected that contracts will be let within a few days. Deliveries of pipe have been made at points near the right-of-way during recent months.

Engineering work for the construction of the line is being handled by the Standard of Indiana staff in cooperation with that of its subsidiary, Stanolind Pipe Line Co. The gasoline-pipe-line system will continue to be directed by the production department of Standard Oil Co. (Indiana). Gasoline-pipe-line affairs have been and will continue to be handled by Fred E. Wood, under the direction of A. W. Peake, vice president in charge of production.

Other gasoline lines which are planned for construction this year in Iowa are the Globe Oil & Refining Co. 225-mile, 6-in. line from McPherson, Kans., to Council Bluffs, Iowa, and Socony-Vacuum Oil Co., Inc. (White Eagle division), 250-mile, 6-in. extension from the present trunk line at Topeka, Kans., to Omaha, Neb., and Sioux City, Iowa. It is expected that work on all of the proposed gasoline lines in the Iowa territory will get under way in May.

Indianapolis May Have Increased Gasoline Pipe-Line Facilities

Because of a competitive situation, it is reported that Standard Oil Co. (Indiana) has found it necessary to consider the construction of a 147-mile 8-in. line from Whiting, Ind., to Indianapolis. This city is now served by an 8-in. line of Shell Oil Co., Inc., with a present daily capacity of 24,000 bbl. of gasoline. This line is part of a system which connects the Shell refinery at Wood River, Ill., with Ohio cities as far east as Columbus.

The situation at Indianapolis will be affected by the construction of a 5,000-bbl. refinery at a location 12 miles north of the city by Rock Island Refining Corp. The plant is being built by Winkler-Koch Engineering Co., Wichita, Kans., and it will be owned by L. B. Simmons, president of the new corporation, and L. E. Winkler, vice president. On completion of the plant in the middle of August, L. E. Kincannon, vice president and secretary, will go to Indianapolis from Duncan, Okla., to assume management.

H. C. Price Co. Has Contracts For 665 Miles of Pipe Lines

In recent letting of contracts by the industry for new work ahead, H. C. Price Co., Bartlesville, Okla., has been awarded contracts for the electric welding of the following pipe lines:

Natural Gas Pipeline Co. of America—121 miles of 26-in., 33 miles from Stinnett to Spearman, Tex., and 88 miles from Meade to Kinsley, Kans., general contractor, W. A. Bechtel Co.

Natural Gas Pipeline Co. of America—101 miles of 26-in. in Iowa and Nebraska, general contractor, O. E. Dempsey Construction Co.

Natural Gas Pipeline Co. of America—88 miles of 26-in. in Iowa, general contractor, W. A. Bechtel Co.

Natural Gas Pipeline Co. of America—River crossings in Iowa, general contractor, W. A. Bechtel Co.

Consumers Power Co.—40 miles of 12-in. near Clare, Mich., general contractor, Dowding Truck & Transfer.

Illinois Pipe Line Co.—27 miles of 10-in. near Bridgeport, Ill., general contractor, Sheehan Pipe Line Construction Co.

Southern Natural Gas Co.—132 miles of 14-in. running from Logansport to Perryville, La., general contractor, B & M Construction Co.

Stanolind Pipe Line Co.—76 miles of 8-in. and 12-in. running from Belcherville, Tex., to Pauls Valley, Okla., general contractor, B & M Construction Co.

Stanolind Pipe Line Co.—40 miles of 12-in., 24 miles near Carrollton, Mo., and 16 miles near East Fort Madison, Ill., general contractor, Oil States Construction Co.

Illinois Pipe Line Co.—40 miles of 8-in. near Bridgeport, Ill., general contractor, Sheehan Pipe Line Construction Co.

The following jobs, on which the welding was contracted to H. C. Price Co., have been recently completed:

Toronto Pipe Line Co.—29 miles of 4½-in. and 6-in. running east from Mount Carmel, Ill., general contractor, Sheehan Pipe Line Construction Co.

Stanolind Pipe Line Co. and Sinclair Pipe Line Co.—75 miles of 8-in., 10-in., 12-in. and 14-in. near Wilmington, Ill., general contractor, Sheehan Pipe Line Construction Co.

Pure Oil Co.—7 miles of 5-in. and 6-in. near Olney, Ill.

Buckeye Pipe Line Co.—23 miles of 6-in. and 8-in. near Ravenna, Ohio, general contractor, Sheehan Pipe Line Construction Co.

Latex and B and M Will Construct Globe's 225-Mile Products Line

Globe Oil & Refining Co., Wichita, Kans., has awarded contracts for the construction of a 225-mile, 6-in. gasoline and refined-products line from McPherson, Kans., to Council Bluffs, Iowa. B and M Construction Corp. will lay 100 miles at the south end of the line which passes through sections of Kansas and Nebraska. Latex Construction Co. will lay 126 miles at the north end in Nebraska and Iowa. Globe officials have estimated that the line will cost approximately $1,250,000. The line will be operated to deliver between 4,000 and 15,000 bbl. of refined products.

Securities Commission Orders U.G.I. to Drop Subsidiaries

WASHINGTON, D. C.—The Securities Commission has formally ordered the United Gas Improvement Co. to sever its relationship with 10 subsidiary utility companies within 1 year.

This action constituted another step in the integration proceedings against the $837,000,000 system under the so-called "death sentence" of the utility act, and narrowed the remaining issues to nonutility subsidiaries and utility subsidiaries in the Pennsylvania-Delaware-Maryland area in which the "primary" system is located.

The U.G.I. recently sold its controlling interest in one of the companies named in today's order—the Connecticut Light & Power Co.

The other companies named were Arizona Power Corp., Concord Gas Co. (New Hampshire), Manchester Gas Co. (New Hampshire), Wyandotte County (Kansas) Gas Co., Nashville (Tenn.) Gas & Heating Co., New Haven (Conn.) Gas Light Co., Hartford (Conn.) Gas Co., Connecticut Railway & Lighting Co., and the Bridgeport (Conn.) Gaslight Co.

Union Pipe Line Co. Applies For Pennsylvania Charter

HARRISBURG., Pa.—The Union Pipe Line Co., of Philadelphia, Pa., has filed an application for a charter to construct and operate a pipe line across Pennsylvania from Marcus Hook to the Pittsburgh district.

The application for the company charter, capitalized at $5,000 of 50 shares at $100 par value each, was filed by Harry O. Ravis, of 11 Nassau Road, Larchmont, N. Y.; W. R. Argyle, of 641 North Chester Road, Swarthmore, Pa., and M. Clyde Sheaffer, of Shiremanstown, Pa., as subscribers and directors.

Pipe-Line Personalities . . . . . G. E. Herrmann

GROVE E. HERRMANN, well known to San Joaquin Valley operators, was recently appointed superintendent of the Tide Water Associated Oil Co.'s San Joaquin Valley pipe-line system in California. After graduating from the California School of Mechanical Arts in San Francisco, Calif., the city in which he was born, Mr. Herrmann was employed by various construction firms in the capacities of foreman, junior engineer and superintendent of construction. In 1915 he entered the petroleum industry when he was employed by the Associated Pipe Line Co. in San Francisco as a draftsman in the engineering department. At that time this company was converting the one and only rifle pipe-line system to a hot-oil system. Upon the completion of this work he became purchasing agent and a few years later was again assigned to the engineering department as chief draftsman. Shortly thereafter he was appointed engineer and in 1923 he was promoted to chief engineer, which position he held until the latter part of 1934, at which time the Tide Water Associated Oil Co. acquired full ownership of the Associated Pipe Line Co.

In 1935 Mr. Herrmann was transferred to the field headquarters at Coalinga, Calif., in charge of maintenance and construction on the San Joaquin Valley pipe-line system. In 1936 he was assigned to the duties of assistant superintendent of this pipe-line system which includes the longest oil trunk lines in the West, and late in 1940 he was appointed superintendent of the system. During his 25 years in the oil industry he has handled many interesting engineering problems, ranging all the way from the construction of main-line pump stations to the installation of submarine pipe lines. The Associated division of Tide Water Associated Oil Co. has two submarine pipe lines. These lines, which are submerged beneath the Pacific Ocean, are at Ventura and Monterey. Ventura production is moved through the Ventura submarine line from shore to tanker while a part of Associated's San Joaquin Valley production moves out through Monterey.

The Corporation Bureau of Department of the State explained after the papers are examined they will be submitted to the Public Utility Commission for approval and will be returned to the Department of State for action on the charter.

During steps preliminary to filing the charter, the Public Utility Commission said the work was being undertaken by the Sinclair Refining Co.

The projected pipe line would parallel those of other major oil companies which already have connection between Marcus Hook and Pittsburgh, where they connect with lines to the western fields.

Mr. Ravis, one of the incorporators of the new firm, is an attorney for the Consolidated Oil Co.

The application sets forth the purposes of the company to be "transporting, storing, insuring and shipping petroleum products, and to construct, maintain and operate such pipe lines, tanks, facilities and equipment as are necessary or proper for the conduct of said business, said pipe line or pipe lines to run within the Commonwealth of Pennsylvania. For a number of years a short pipe-line system delivering oil from the Allegheny producing area to the Sinclair refinery at Wellsville, N. Y., has been operated by an organization carrying the name of Union Pipe Line Co.

Magnolia Constructs Terminals on Fort Worth-Oklahoma City Line

Magnolia Petroleum Co. is building terminal facilities at two points on the 4½-in. gasoline pipe line between the company's refinery at Fort Worth, Tex., and Oklahoma City, Okla. One of these is located in 35-4s-1w, near Lone Grove, Okla., where deliveries will be made into tank cars for shipment over the Rock Island Railroad. The other terminal is located in 28-12n-2w, Oklahoma City, where it will also make deliveries to this railroad.

Northern Pipe Line Co. Elects Directors

At the annual meeting of stockholders of the Northern Pipe Line Co. held last week the following board of directors was elected:

P. R. Applegate, New York City; J. A. Bartlett and J. P. Blackford, Oil City, Pa.; J. H. Peper and A. B. Oakes of New York City.

The board of directors elected the following officers: President, P. R. Applegate; vice president and general manager, J. A. Bartlett; vice president and chief engineer, J. H. Peper; secretary, J. R. Fast; treasurer, C. H. Cleaver, New York.

Williams Brothers Corp. Is Completing Double-Line Project for Magnolia

Williams Brothers Corp. is completing construction work on two parallel lines laid between La Gloria and Corpus Christi, Tex., for Magnolia organizations. One of these is a crude-oil line laid for Magnolia Pipe Line Co. The other is a products line laid for Magnolia Petroleum Co. This construction organization is laying 35 miles of gas line at Minneapolis.

Stanolind Will Enlarge North Texas Facilities

Stanolind Pipe Line Co. will lay a line to transport oil from the Voth shallow pool, south of Muenster in northwest Cooke County, Texas. The company plans to replace a 26-mile, 4-in. line with 6-in. pipe because of the increased load put on the system in the area; the 26-mile replacement job will be done between Muenster and the trunk line at Nocona in northwest Montague County, Texas.

British American Seeks Permit For Line to Offshore Well

HOUSTON, Tex.—Permission to place a pipe line from the British American Oil Producing Co. well near Sabine, in Galveston County, Texas Gulf Coast, to storage tanks, has been asked by the oil company, the U. S. Engineer's Office at Galveston reported. The well is located in the Gulf of Mexico from a point on the shore line about 7 miles southeast of Sabine. It is about 9,000 ft. offshore. It is proposed to lay a 4-in. pipe line on the bed of the gulf and allow it to sink into the mud. The line is to be used in transporting oil from the well to storage facilities on shore.

Coffield & Guthrie Lays Line In Mitchell County, Tex.

As a result of the completion of a pipe line serving the Dockery & Robbins pool in northwest Mitchell County, Texas, it is expected that several new locations will be announced in the area. The new line will convey crude to the Col-Tex tanks near Westbrook, Tex.

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FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

The coming of good weather combined with some optimism due to improving prices operated to give last week the greatest number of completions of any week during the year. The greatest increases were recorded in Illinois, 18 above last week, Kansas 20, West Texas 13, Ohio 11, and Appalachian fields, North Central Texas and Southwest Texas 10 each. Oil wells were up 63 over last week, gas wells down 12 and dry holes up 38, making a net increase of 89.

Outside of Illinois and Ohio, the reported increases are part of a trend whose future appears to be fairly definite for the next few months. Kansas operators are still working out along the Central Kansas uplift, although most of the activity is localized in the older producing fields where there are still many proven locations to be drilled. In West Texas, the Slaughter and Wasson fields are responsible for many completions and there will be many more in these fields before activity slows down. Flooding operations in the Appalachian fields are slowly increasing. In North Central Texas, the larger discoveries of last year are being proved up and there is much new wildcatting. It is true that the Fort Worth basin play did not live up to expectations but there is considerable deeper drilling in the older areas which has a long way to go before stopping. In Southwest Texas, Glen and the Agua Dulce-Stratton structure are the most active.

Development of the West Texas Ordovician pays, further activity in the Wilcox trend, particularly in Louisiana, and increased drilling in East Texas may be expected.

TEXAS GULF COAST: Outposts to several fields, all marking possible extensions, are awaiting tests. The fields concerned are Willow Slough, Seabreeze, Fig Ridge, West Ganado, and Fannett. Stanolind records a major extension to Martha (p. 110).

NORTH LOUISIANA: The fourth Wilcox pool during the past year was brought in in La Salle Parish (p. 128).

ALBERTA: In addition to opening up noteworthy production east of the Turner Valley field, Standard of British Columbia appears to have the first Sunburst production in Canada. The third test on the Steveville-Princess structure found oil in what is believed to be Sunburst. The discovery found gas in this horizon and oil in the Madison (p. 143).

CALIFORNIA: The seventh Callender sand in the Dominguez field has been extended ¼ mile west near the townlot area (p. 115).

KANSAS: Zenith is extended ¾ mile west. Lost Springs is also extended ½ mile south. The Penokee pool in Graham County, at present the westernmost pool on the Central Kansas uplift, has a second producer (p. 120).

MICHIGAN: Drilling is picking up although recent encouragement is largely limited to gas. An Allegan County test reports gas in the Salina. It is being drilled to the Trenton. A Barry County wildcat reports gas in the Monroe (p. 140).

OHIO: Gas development continues with large wells in the Clinton in Muskingum County and in the Newburg near Cleveland. A test in Wayne County found the Trenton nonproductive and is being deepened. Magnolia's Mahoning County test is near the Clinton (p. 104).

OKLAHOMA: Oklahoma's most important discovery of the year is Hall-Jordan 1 Whitehead southwest of Shawnee. The well is reported flowing 225 bbl. an hour from the Wilcox. This test is some 10 miles west of the Earlsboro pool in the Greater Seminole area and may open a large area for prospecting in the Wilcox sand (p. 123).

LOUISIANA GULF COAST: After nearly 20 years of inactivity, the old Pine Prairie dome may be revived as a result of showings in the Sparta member of the Wilcox. Other Wilcox tests in Avoyelles and Rapides parishes are being watched as they near the sand. St. Gabriel, Eola and Gueydan have been extended (p. 119).

SOUTHWEST TEXAS: After proving dry in the Edwards, a Bastrop County test plugged back and produced from a crevice in the Austin chalk. The development on the east flank of the Agua Dulce-Stratton structure where oil has been found downdip may be extended considerably as a result of the discovery of oil to the northeast of Agua Dulce (p. 105).

ILLINOIS: White County's seventeenth pool is in sight as a well south of Carmi shows in three formations. A Shelby County wildcat is reported swabbing from the Aux Vases. A program to test the Devonian at Louden appears to be under way. The Benton pool in Franklin County continues to grow as a big flowing well is reported a mile south of production (p. 135).

COMPLETIONS IN ALL FIELDS . . .

(Week Ended April 19, 1941)

	Oil	Gas	Dry	Total	1941 total comp. to date	1940 total comp. to date
N. Y., Pa., and W. Va.	64	18	7	89	1,372	1,113
Ohio	6	10	16	32	425	266
Indiana	7	1	6	14	129	101
Kentucky	7	1	4	12	158	116
Illinois	52	1	20	73	832	977
Michigan	6	1	9	16	244	372
Kansas	34	1	10	45	489	414
Oklahoma	15	3	13	31	414	502
Nebraska	1	0	2	3	25	0
Missouri	0	0	1	1	2	0
Texas:						
North Central Texas	36	2	28	66	774	890
West Texas	36	0	0	36	553	607
Texas Panhandle	12	1	1	14	152	170
Eastern Texas	10	5	2	17	318	214
Texas Gulf Coast	10	1	3	14	296	377
Southwest Texas	28	0	13	41	464	674
Total Texas	132	9	47	188	2,557	2,932
North Louisiana	8	0	5	13	169	171
Louisiana Gulf Coast	14	1	4	19	232	247
Total Louisiana	22	1	9	32	401	418
Arkansas	1	0	0	1	51	61
Mississippi	5	0	2	7	60	18
Montana	4	2	0	6	70	39
Wyoming	1	0	0	1	39	47
Colorado	0	0	0	0	10	6
New Mexico	4	0	0	4	85	198
California	17	0	8	25	310	296
Total United States	378	48	154	580	7,673	7,876
Total previous week	315	60	116	491		
Week ended Apr. 20, 1940	393	28	107	528		

WEST TEXAS: Casing has been set in a deep wildcat test in eastern Crane County which would give West Texas its first oil field below the 10,000-ft. level, should commercial production be developed when plug is drilled. It is Gulf 1-F University, which drilled shows of oil in the Ellenburger lime from 10,626 ft. to 10,656 ft., total depth (p. 130).

NORTH TEXAS: Setting off one of Young County's most intense lease plays in several years was the discovery made by Burns 1-A Larrimore, just south of Olney in the northern part of the county. The well has been completed in the Mississippian lime to open a definite trend of Mississippian production northward from Stephens County, through Young County, and into Archer County. A discovery was officially gaged in Clay County, and completion attempts were under way at Montague County's newest Caddo conglomerate discovery (p. 133).

EASTERN TEXAS: Eastern Texas' newest Woodbine sand discovery, opened by Tex-Harvey Oil Co. 1 Cartmell, just 2 miles northeast of the Long Lake field in Anderson County, is scheduled for immediate development with the discovery operator's staking of five new locations on his 1,200-acre block. Considerable acreage buying is being done immediately outside of the block. New wildcats were starting in Cherokee, Van Zandt and Morris counties (p. 137).

WEST CENTRAL TEXAS: A new and long-testing discovery well in southern Jones County was officially gaged, while another prospective strike was undergoing completion attempts. New deep wildcat tests were located in Eastland and Shackelford counties (p. 133).

Trenton Dry in Wayne County Test; Will Deepen

By STAFF CORRESPONDENT

WOOSTER, Ohio, Apr. 21.—The Wayne County Trenton test failed to react to acid treatment. Ohio Oil Co. 8 J. H. Armstrong in Section 14, Wooster Township, was given two acid treatments each of 500 gal. on successive days without success. Oil showings were logged in the Trenton at 5,015-21 ft. and 5,035-39 ft., with the top of the formation called at 5,005 ft. Tubing is being pulled and hole will be deepened.

In Mahoning County Magnolia Petroleum Co. 1 Della Shrum in Section 4, Smith Township, is drilling at 4,820 ft., 31 ft. in the shell just above the Clinton sand.

A 6,500,000-cu. ft. gas well in Muskingum County at the south county line in Brush Creek Township, spurs the Clinton sand development in this area. Activity continues in Seven Hills village, Cuyahoga County, with a 5,000,000-cu. ft. gas well in the Newburg.

SOUTHEAST OHIO

Another fair well in Clayton Township, Perry County, is being completed by the Preston Oil Co. on the Mary A. Yarger farm, SE Section 5, which was bottomed in the Clinton sand at 3,235 ft. and filled up 2,300 ft. with oil with little gas showing. It will be shot the last of the week and is expected to start off at 300 bbl. a day.

OHIO COMPLETIONS

Coshocton County

Linton Township: William Peiffer 1 McAllister, Sec. 20, show oil, shot, Berea, plugged, T.D. 910 ft.
Perry Township: Preston Oil 3 John R. Rine, Sec. 16, 40 bbl., shot, Clinton, T.D. 3,193 ft.

Cuyahoga County

Independent Township: Obermiller Bros. 1 W. H. Franz, Seven Hills village, 5,000,000 cu. ft. gas, Newburg 2,709-25 ft.

Licking County

Mary Ann Township: Ohio Fuel 2 Ray Mahaffey, Sec. 15, 340,000 cu. ft. gas, shot, Clinton, T.D. 2,608 ft.
Allen Willey 2 Hoover, Sec. 16, dry, Clinton, T.D. 2,626 ft.
Guy T. Shrider et al 2 Davis, Sec. 8, 9 bbl., Berea, T.D. 711 ft.
Newark Township: George Lacknett 1 Minnie Hendricks, first quarter, 300,000 cu. ft. gas, shot, Clinton, T.D. 2,655 ft.
Dowler Oil Co. 1 W. H. Palmer, northwest Newark corporation, 200,000 cu. ft. gas, shot, Clinton, T.D. 2,382 ft.
Kuntz-Hulse, Inc., 1 A. S. Stephan, Riverview addition, 20,000 cu. ft. gas, Clinton, plugged, T.D. 2,389 ft.
Everett Co. 1 F. R. Castor, first quarter, dry, Clinton, T.D. 2,411 ft.
Washington Township: C. A. Davis 1 W. B. Hancock, Lot 3, second quarter, 20,000 cu. ft. gas, Clinton, T.D. 2,413 ft.

Medina County

Chatham Township: Preston Oil Co. 1 M. W. Whitman, Lot 6, Tract 5, dry, Berea, T.D. 556 ft.
Preston 5-XGO D. A. Clapp, Tract 15, Lot 10, dry, Berea, T.D. 500 ft.
Preston 7-H J. F. Grigsby, Tract 15, Lot 11, 5 bbl., Berea, T.D. 507 ft.
Preston 6-GO J. F. Grigsby, input, Berea, T.D. 582 ft.
Preston 7-GO J. F. Grigsby, input, Berea, T.D. 528 ft.
Preston 7-XGO J. F. Grigsby, dry, Berea, T.D. 493 ft.
Preston 7-HO J. F. Grigsby, input, Berea, T.D. 567 ft.
Preston 7-HO J. F. Grigsby, dry, Berea, T.D. 500 ft.
Preston 7-XHO J. F. Grigsby, dry, Berea, T.D. 478 ft.

Meigs County

Sutton Township: Ebersbach et al 1 Eber Roush, Lot 290, 200,000 cu. ft. gas, shale, T.D. 3,334 ft.
Rutland Township: Downie et al 1 A. Ward, Sec. 32, 300,000 cu. ft. gas, second Cow Run, T.D. 726 ft.

Muskingum County

Brush Creek Township: Glen Sturm 1 Manly McLaughlin, SW SE Sec. 15, 6,500,000 cu. ft. gas, Clinton 4,111-49 ft., T.D. 4,153 ft.
Harrison Township: Pure Oil Co. 1 Margaret Barringer, Sec. 30, dry, Clinton and Medina, T.D. 4,205 ft.

Monroe County

Seneca Township: Pryor Oil Co. 1 C. K. Pryor, Sec. 20, dry, Berea sand missing, T.D. 1,635 ft.
Wayne Township: Bach et al 3 L. Steigner heirs, Sec. 27, old well drilled deeper, 50,000 cu. ft. gas, shot, Berea, T.D. 1,785 ft.

Noble County

Center Township: Smithberger 1 Hugh Cox, Sec. 19, 1,100,000 cu. ft. gas, lime, sand, T.D. 1,000 ft.
Seneca Township: Chaseville Co. 1 Myrta Graham, Sec. 31, dry, Berea, T.D. 1,539 ft.

SUMMARY OF COMPLETIONS

Ohio

	No.	Bbl.	Footage
Oil	6	51½	9,093
Gas	10	*15.2	24,989
Dry	16	.....	22,436
Total	32	.....	56,518
Input wells	3	.....	1,677
Recompletions	1	.....	.....

Indiana

Oil wells	7	864	17,405
Gas wells	1	*0.18	920
Dry holes	6	.....	10,063
Total	14	.....	28,388

Eastern Kentucky

Oil wells	2	40	2,136
Gas wells	1	*0.4	1,561
Total	3	.....	3,697

Western Kentucky

Oil wells	5	115	4,284
Dry holes	4	.....	3,958
Total	9	.....	8,242

*Million cu. ft.

Morgan County

Windsor Township: Swingle et al 1 W. H. Creighton, Lot 85, dry, Maxton, T.D. 1,010 ft.

Washington County

Aurelius Township: E. H. Schaffer et al 1 John Hesson, SW Sec. 22, 3-bbl. pumper, Berea, T.D. 1,508 ft.
Nichols et al 1 Cora and Isaac W. Atkinson, NW Sec. 17, dry in Macksburg 500-ft. sand, P.B. and testing oil shows in 300-ft. and Peaker sands at 425 ft.
Rockey Oil Co. 1 Smith, Sec. 22, 2 bbl., shot Berea, T.D. 1,510 ft.
Barlow Township: J. Campbell 2 Alice Jenking, Sec. 4, 30,000 cu. ft. gas, Squaw, plugged, T.D. 1,618 ft.
Fearing Township: H. Dalley et al 1 Frank Seyler, Lot 99, dry, T.D. 916 ft.
Newport Township: Schneider Oil Co. 1 John F. Haynes, SW Sec. 27, 1 bbl., Salt sand, T.D. 1,250 ft.
Albert Stine 1 fee, SE Sec. 27, ½ bbl., Macksburg sand, T.D. 1,125 ft.

Wayne County

Plain Township: Kemrow Co. 3 Francis Kean, Sec. 32, 1,250,000 cu. ft. gas, shot, Clinton, T.D. 2,993 ft.

INDIANA

EVANSVILLE, Ind., Apr. 21.—Two new operations were started last week in the area near Gulf Refining Co.'s new Posey County discovery. At the end of the week, Gulf 1 L. Blackburn was rigging up tools in NE NE SE 23-6s-13w, one location north of the discovery, while ½ mile west, location had been staked by C. A. Lynch for 1 Seiler heirs in SW NE SW 23-6s-13w.

The discovery well, Gulf Refining Co. 1 William F. Schrieber, SE NE SE 26-6s-13w, early this week was reported swabbing 26 bbl. of oil a day from the Cypress sand at 2,426-83 ft. The discovery well is located about 2 miles west of nearest production in the Caborn field.

Illind Oil Co. 1 Fredericka Hendricks, SE SW SE 31-6s-11w, Vanderburg County, was expected to be abandoned last week after finding the Tar Springs dry. Illind Oil Co.'s test, however, found 15 ft. of saturation in the Waltersburg topped at 1,791 ft. Although a core analysis showed 80 per cent water content, competent observers are predicting a new oil pool will be found in the area. The 1 Fredericka Hendricks, a test east of Heusley dome production, is located about 1,200 ft. northwest of T. W. Drake 1 Nurrenbern, recent pool opener in the Mansfield sand.

Guy Mabee 1 Helm, SE NW NW 27-3s-14w, was acidized in two McClosky breaks last week and is reported flowing between 40 and 50 bbl. an hour. The 1 Helm, in the Griffin pool of Gibson County, is one of the largest producers ever completed in this field. Meanwhile, west of the Griffin pool in western Gibson County, W. C. McBride has set casing at 1 Jesse Blood, SE NE SE 28-3s-14w. Casing was set through the McClosky formation which was showing fair saturation. The 1 Blood may be a small producer.

INDIANA COMPLETIONS

Decatur County

Wildcat: Hoosier Public Utilities 221 Leingrauber, SW SE 1-9n-9e, 176,200 cu. ft. gas, 140-qt. shot 878-920 ft., Trenton 878 ft., T.D. 920 ft.

Gibson County

Griffin pool: Hall Edwards 18-C Maier, NE SE NE 14-3s-14w, pumped 55 bbl., 2,000 gal. acid, McClosky 2,858-67 ft., T.D. 2,871 ft.
Hall Edwards 28-A Maier, NW SE NE 14-3s-14w, flowed 450 bbl., natural, Cypress 2,504-33 ft., T.D. 2,533 ft.
South Griffin pool: Continental 7 Kleiderer, NW NE SW 26-3s-14w, pumped 90 bbl., 80-qt. shot 2,764-2,800 ft., reamed removable pipe 2,658-67 ft., 2,574-93 ft., 2,089-98 ft., T.D. 2,804 ft.
Continental 22 Keck, NE NW SW 26-3s-14w, pumped 125 bbl. from all sands, natural, pays 2,069-98 ft., 2,534-45 ft., 2,572-87 ft., 2,661-71 ft., 2,784-86 ft., 2,788-90 ft., T.D. 2,808 ft.
Wheeling pool: Hyslop et al fee, NW NE NW 20-1s-9w, pumped 50 bbl., 1,000 gal. acid, shows 1,641-46 ft., 1,661-66 ft., T.D. 1,674 ft.
Somerville pool: P. W. Harr et al 1 Weber, NE SE SW 32-2s-9w, dry, T.D. 1,789 ft.
Wildcat: Petroleum Exploration Co. 2 Hull, SE NW NE 20-1s-11w, location abandoned.

Knox County

Wildcat: C. M. Lane et al 1 Morgan, SW SE SW 32-2n-9w, dry, Golconda 1,362 ft., H.F.W. 1,690-1,720 ft., T.D. 1,758 ft.
Ameriagene, Inc., 2 Morgan, 1,200 ft., NWL 550 ft. NEL Donation 75-3n-9w, dry, sand 743-865 ft., five bailers water an hr., T.D. 865 ft.

Posey County

East Calvin pool: Tide Water 5 Doll, NW SW SE 33-3s-14w, pumped 69 bbl., pays 2,537-49 ft., 2,774-98 ft., T.D. 2,802 ft.
Wildcat: Harris et al 1 Dougherty, NE NW NW 1-4s-14w, dry, T.D. 2,750 ft.

Spencer County

Troy pool: Troy Refining 7 Anderson, SE NE NE 11-6s-4w, pumped 25 bbl., 60-qt. shot 760-79 ft., 1,500 gal. acid 911-13 ft., T.D. 1,913 ft.

Starke County

Wildcat: R. B. Dambiyer 1 Francois, NE SE SW 5-32n-2w, dry, Trenton 1,068 ft., T.D. 1,171 ft.

Vanderburg County

Heusler pool: C. J. Williams et al 1 Strueh, SW SW NW 6-7s-11w, dry, T.D. 1,833 ft.

INDIANA DRILLING REPORT

Crawford County

Reece-Dietz et al 1 Esarey.....NE NW NE 36-3s-1w S.D. 395 ft.

Daviess County

D. L. Norris et al 1 Hunter.....SW SE NW 4-2n-5w Spud.

Gibson County

Mabee 1 Helm ..... SW NW NW 27-3s-14w T.D. 2,886 ft., 5-in. 2,868 ft., waiting on cement.
W. C. McBride et al 1 Blood.....SE SE NE 28-3s-14w Glen Dean 2,284 ft., Cypress 2,525 ft., Benoist 2,674 ft., Renault 2,711 ft., Aux Vases 2,778 ft., Ste. Genevieve 2,806 ft., cored 2,225-35 ft., received 10 ft. saturated sand, 15-min. D.S. test showed 500 ft. water and no oil, cored 2,778-91 ft., received 7½ ft. saturated sand, 30-min. D.S. test showed 30 ft. oil and mud, cored 2,889-2,900 ft., received 2 ft. hard tight lime, 30-min. D.S. test at 2,885 ft. showed 330 ft. oil, 135 ft. mud and 270 ft. water, will run electric log.

Greene County

Midwest et al 1 Good ..... W½ NE NW 21-6n-7w Ste. Genevieve 909 ft., S.D. 932 ft.

Knox County

S. C. Yingling et al 1 Schneck S½ SE SW NE 10-1s-12w Glen Dean 1,784 ft., Ste. Genevieve 2,290 ft., drilling 2,440 ft.

Perry County

H. E. Pollock 1 J. F. Heck.....SE SE SE 16-7s-3w S.D. 270 ft.

Posey County

McCummings et al 1 Ritter.....SW SW SE 9-8s-14w S.D. 2,698 ft.

Spencer County

J. B. Miller et al 1 Dooley..... NW NE NW 19-7s-7w T.D. 300 ft., rigging up new machine.
I. A. Paulhamus 1 Grass.....SW NE SE 11-6s-4w Drilling 200 ft.
Ladmer et al 1 Cokes ..... N½ SE NE NE 12-7s-8w Set 8-in. 420 ft., S.D. 500 ft.
Texas 1 Scamahorn ..... SW NE NW 29-7s-6w First report, rigging up machine.

Sullivan County

W. J. Reynolds 1 Hyde.....SW NE NE 9-8n-10w Ste. Genevieve 1,145 ft., show oil 1,125-45 ft., drilling 1,175 ft.
G. W. Boyce et al 1 Kelly.....SW SW NE 10-8n-11w Drilling 1,650 ft.
Trio Drlg. 1 Ladd .....NE SW 2-7n-10w Spud and S.D.

Vanderburg County

R. A. Mitchell et al 1 Keck.....NE SW SW 6-7s-11w S.D. 620 ft.
T. W. Drake 1 Nurrenbern ..... SE NE NE 6-7s-11w

(Continued on Page 138)

SOUTHWEST TEXAS

By
F. L. SINGLETON

Austin Chalk Discovery Is Reported in Bastrop Co.

CORPUS CHRISTI, Tex., Apr. 21.—A new Austin chalk discovery in the Balcones fault district, discovery of a new producing area northeast of the Agua Dulce field, Nueces County, and the announcement of an important outpost well in the new South Premont field, Jim Wells County, were the highlights of development last week in Southwest Texas.

The new pool opener is Marts & Beaven 1-A Walker, 5½ miles east of Elgin, Bastrop County, which is shut in for storage after it swabbed at the rate of 16 bbl. of 36.9° gravity oil per hour. This well topped the Edwards lime at 3,324 ft., and drilled the formation to a total depth of 3,350 ft. The hole was plugged back to 2,920 ft. and the test was made after the formation was acidized with 1,000 gal. of acid. Top of the Austin chalk was logged at 2,582 ft., and the base at 3,016 ft. Production is from a crevice in the chalk at 2,830-50 ft. Location is in the George Glascock Survey No. 4.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Laredo District			
Oil wells: Colorado	2	244	5,888
Other fields	9	537	29,816
Dry holes: Fields	5	.....	14,383
Wildcats	3	.....	4,917
Total	19	.....	55,004
Lower Gulf Coast			
Oil wells: Agua Dulce	1	337	6,459
Stratton	1	92	6,740
Other fields	11	1,603	49,244
Dry holes: Fields	3	.....	18,811
Wildcats	1	.....	6,210
Total	17	.....	87,464
San Antonio District			
Oil wells: Fields	4	16	4,364
Dry holes: Wildcats	1	.....	1,807
Total	5	.....	6,171

Georgetown Shows in Medina

In Medina County, 3 miles south of Dunlay, J. W. Duncan & F. A. Brown 1 Haby is drilling in lime with an oil odor at 1,636 ft. The showing of the oil is believed to be from the Georgetown lime, although the top of the formation was not reported.

PREMONT DISCOVERY.—Magnolia 1 Seeligson, unit 4, completed the previous week to open a new field about 1½ miles southwest of Premont has been killed, and the well will probably be cored deeper in search of a deeper sand. The well was completed through perforated casing at 5,024-30 ft. Before it was killed, the well flowed 89 bbl. of 38.9° gravity oil per day through a 9/64-in. choke. Tubing pressure was 1,475 lb., and casing pressure 1,850 lb. Location for an important outpost was announced for the area by the company as 1 Seeligson, unit 3, was staked about 8,000 ft. southwest of the discovery well in Lot 54, Section 61, of the Haidemans subdivision, S.K.&K. Survey 237.

JIM WELLS FAILURES.—Two Frio-Vicksburg tests in Jim Wells County were dry. Arkansas Fuel 1 Brieger, west of the Orange Grove townsite, was quit at 5,110 ft., while J. H. Dunn 1 Hranicky, east of Orange Grove was dry at 5,505 ft. Sand with an oil and gas show was logged the previous week at 5,147-65 ft., but drill-stem testing recovered salt water. No additional showings were logged.

Coloma Creek Defined

The producing area of the Coloma Creek field, Calhoun County, was apparently defined as J. J. McSpadden 1-B Clark, 1,300 ft. southwest of the discovery well, swabbed dry at 5,882-83 ft., and the well is expected to be abandoned.

SAN ANTONIO BAY.—Gulfboard 1-114 State, a marine operation in San Antonio Bay, is bottomed at 6,404 ft. and casing is being cemented. Whether the well will be tested or drilled deeper was not announced. No shows have been reported.

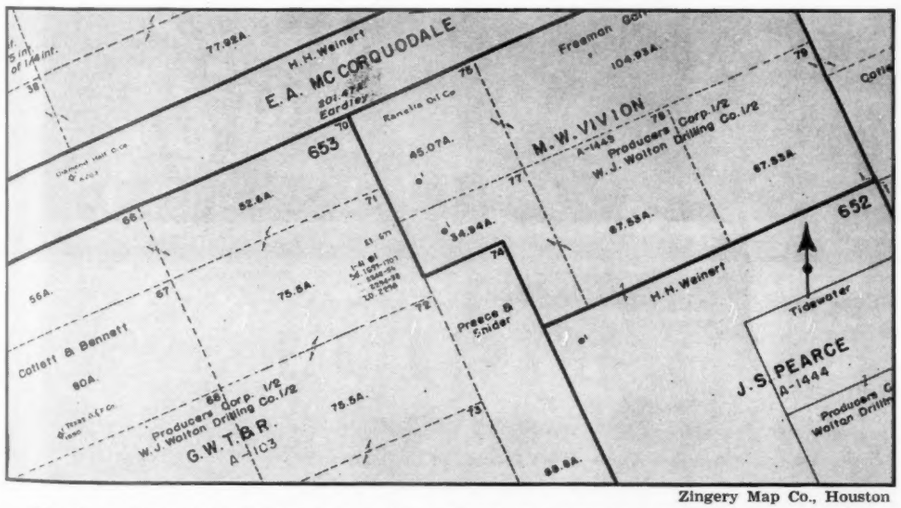
AGUA DULCE-STRATTON.—Development along the Agua Dulce-Stratton trend in Nueces County is expected to gain momentum as the result of the completion of W. B. Osborn and Mid-Continent 1 Burow, about 2 miles northeast of the Agua Dulce field. While no accurate gage was available, the well opens a new area along this already active trend as it was flowing into the pits through a 7/64-in. choke under a tubing pressure of 700 lb., and shutin casing pressure of 100 lb. The well is flowing through casing perforations opposite sand at 6,712-14 ft. The well is reported to be flowing at the rate of 3 bbl. of 46° gravity oil per hour.

WILLACY COUNTY.—Pan-American 1-B Kent, approximately 1¼ miles northwest of the discovery well of the Willamar field, Willacy County, has been officially completed for an initial production of 91 bbl. of 30.1° gravity oil per day through a ¼-in. choke. Tubing pressure was 300 lb. The well is producing through casing perforations from a sand section in the Frio, which was topped at 7,847 ft. Interest in the field for the next several weeks will be centered on the Pan-American 1 F. W. Burgess, which is being started about 1 mile southwest of the discovery well in Share 13, San Juan de Carricitos grant.

SOUTHEAST OF RINCON.—Interest in Starr County was centered on W. R. Davis 1-C F. Davenport, a wildcat southeast of the Rincon field, which is drilling below 3,900 ft. This is the first of several wells which will be drilled in an attempt to add additional acreage to the field proper.

BENAVIDES EXTENDED.—Gas-distillate production in the Benavides field, Duval County, was extended about ½ mile as Hiawatha Oil & Gas Co. 31 Parr flowed an unestimated amount of gas and distillate while cleaning out, through a ¼-in. choke. Tubing pressure was 1,980 lb., and shut-in casing pressure 2,100 lb.

South of the Kreis area, tentative location for a Pettus sand test has been made by the Bridwell Oil Co., which will be drilled in Survey No. 75.



Zingery Map Co., Houston

Plat of the Carrizo field, showing location of two outpost wells which have reached interesting stages

SOUTHWEST TEXAS COMPLETIONS
LOWER GULF COAST DISTRICT

Bee County

Genevieve field: J. R. Dougherty 8 Hicks, dry, T.D. 4,300 ft.

Calhoun County

Duck Bay field: Coronado Corp. 2-153 State, 72 bbl., 3/32-in. choke, perf. casing 5,659-60 ft., T.D. 5,664 ft.

Wildcat: Moore & Ahern 1 Moore & Innis, dry, T.D. 6,210 ft.

Goliad County

Weser field: W. R. Davis 2-C Albrecht, dry, T.D. 8,526 ft.

Jim Wells County

Wade City field: W. R. Quinn 1 Laging, 74 bbl., ⅛-in. choke, sand 4,799-4,801 ft., T.D.

Nueces County

Agua Dulce field: C. P. Burton 2 Mounger, 337 bbl., ¼-in. choke, perf. casing 6,430-45 ft., T.D. 6,459 ft.

Minnie Bock field: Windsor 7 Howze, 43 bbl., 13/64-in. choke, perf. casing 3,817-20 ft., T.D. 3,860 ft.

Stratton field: Southern Minerals Corp. 13 Stratton, 92 bbl., 3/32-in. choke, perf. casing 6,554-62 ft., T.D. 6,740 ft.

Refugio County

McFaddin field: Barnsdall 5 Marberry, 149 bbl. oil plus 8 per cent salt water, ⅛-in. choke, perf. casing 5,299-5,301 ft., T.D. 5,304 ft.

Tom O'Connor field: Quintana 19 Heard, 607 bbl., ¼-in. choke, perf. casing 5,867-77 ft., T.D. 5,925 ft.

Woodsboro field: Southern Minerals Corp. 1 R. H. Wood, 55 bbl. oil plus 92 per cent salt water, 7/64-in. choke, perf. casing 5,900-03½ ft., T.D. 5,905 ft.

San Patricio County

East White Point field: Houston 7 fee, 128 bbl., ⅛-in. choke, perf. casing 5,624-45 ft., T.D. 5,900 ft.

Midway field: W. F. Morgan 3 Schmidt, 76 bbl. plus 25 bbl. salt water, ⅛-in. choke, perf. casing 5,355-40 ft., T.D. 5,349 ft.

W. R. R. Oil Co. 8-973 State, 137 bbl., ¼-in. choke, perf. casing 5,556-85 ft., T.D. 5,840 ft.

British-American 2 Ivey, 143 bbl., ⅛-in. choke, perf. casing 5,322-24 ft., T.D. 5,345 ft.

Gibson 8 Floerke, 119 bbl., ⅛-in. choke, perf. casing 5,315-33 ft., T.D. 5,351 ft.

White Point field: C. & R. Oil Co. 1 Hunter, dry, T.D. 5,985 ft.

LAREDO DISTRICT

Duval County

Benavides field: Hiawatha 30 Parr, 34 bbl., ¼-in. choke, perf. casing 5,590-5,600 ft., T.D: 5,975 ft.

Casa Blanca field: Adelon Oil Corp. 4-A Martin, 55 bbl. oil and 25 bbl. salt water, pumping, sand 1,114-39 ft.

Charamousca field: Magnolia 7 Duval County Ranch Co., 60 bbl., pumping, perf. casing 1,548½-49½ ft., T.D. 1,551 ft.

Wildcat: Graham Brothers 2 Holzapfel, dry, T.D. 1,204 ft.

Jack Giblin 1 Holzapfel, temporarily abandoned, T.D. 1,203 ft.

Hidalgo County

Sam Fordyce field: Phillips 1 Elizondo, 21 bbl., 3/32-in. choke, perf. casing 3,446-48 ft., T.D. 3,531 ft.

H. J. Porter 1 Salinas, 48 bbl., 3/32-in. choke, perf. casing 3,431-32 ft., T.D. 3,455 ft.

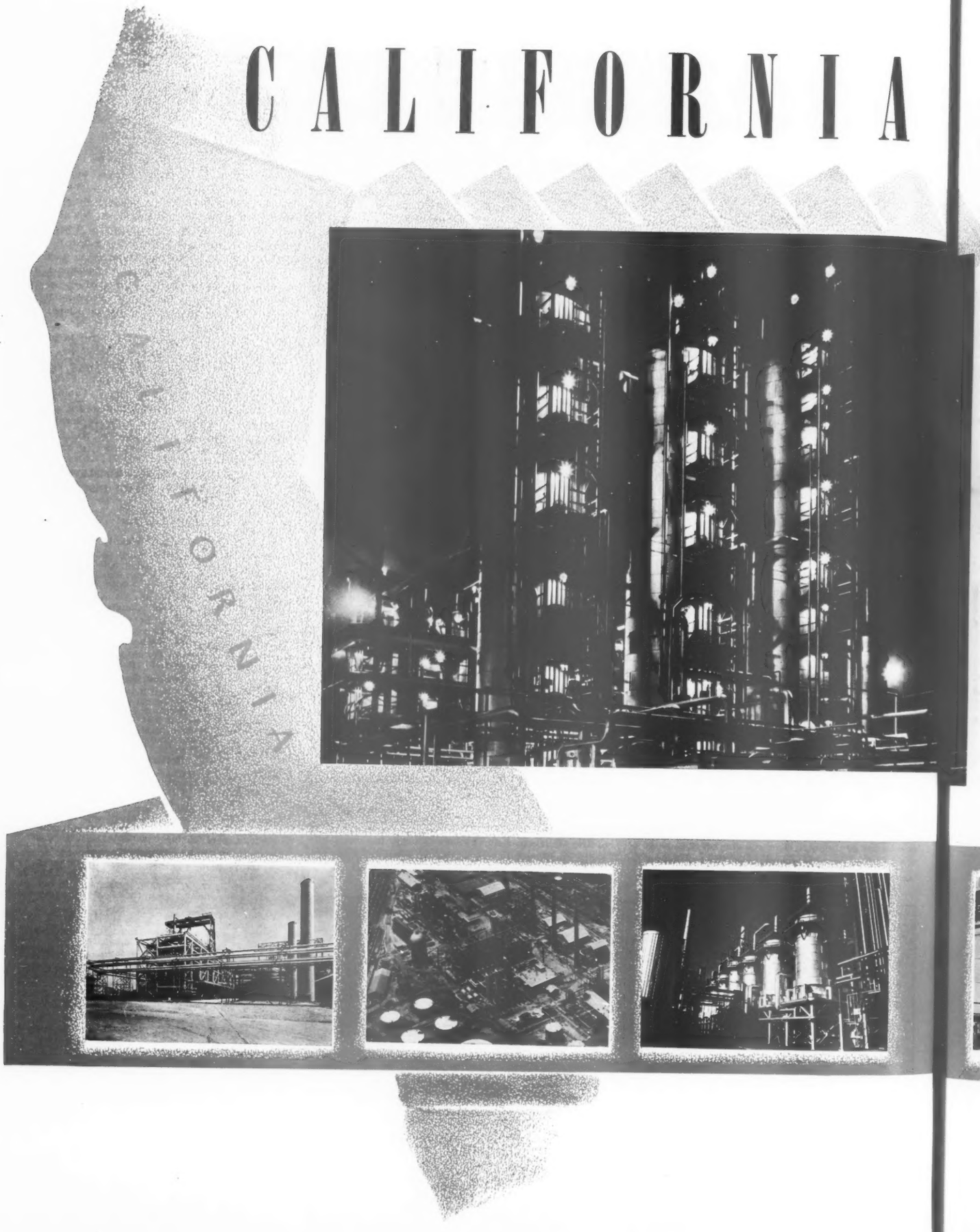
Royal Oil & Gas Co. 1 Garcia Land & Livestock Co., dry, T.D. 3,898 ft.

Jim Hogg County

Alworth field: W. G. French 1 Garza, dry, T.D. 3,022 ft.

(Continued on Page 122)

CALIFORNIA



Joins the HOUDRY Column

A 10,000-bbl.

Catalytic Cracking Unit is now being built in California with detailed plans worked out by Badger engineers in co-operation with the owner's engineers.

Photograph shows the new Houdry Research Laboratory consisting of Research, Physical Test, and Development buildings.

When completed, this unit will make a total of some 200,000 bbls. Houdry Catalytic Cracking capacity devoted to the production of high octane aviation and motor gasoline and fuel oil . . . with all operations having these very useful features:

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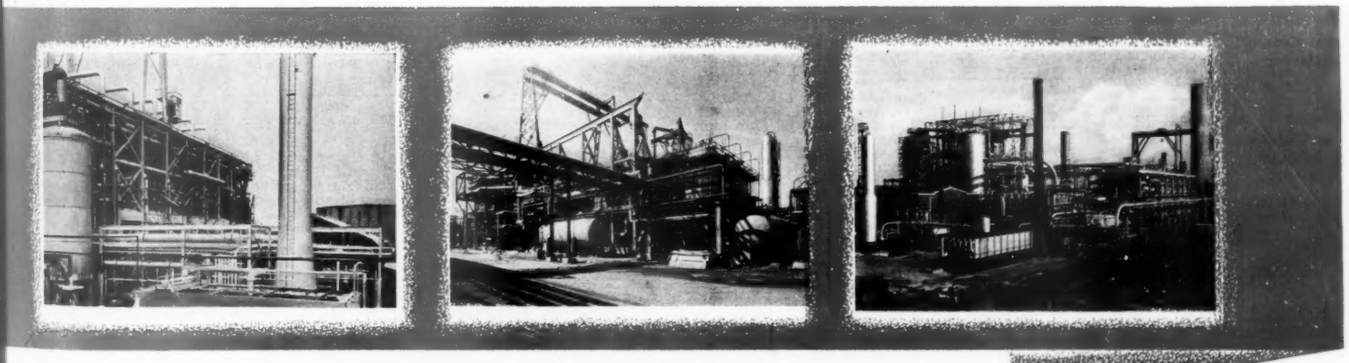

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Lack of Price Increase May Retard Prospecting

By T. R. INGRAM

DENVER, Colo., Apr. 21.—Crude-oil posted prices in the Salt Creek field, which in former years were based on the Mid-Continent scale, were not advanced on April 1 and as a consequence Wyoming and Colorado fields which follow Salt Creek did not share in the increase.

Drilling operations in the Rocky Mountain area have not yet shown the usual spring spurt and only two wildcats were reported getting under way, one in the Iba district and the other in Big Piney, both in Wyoming. One new operation was reported in La Barge, four in Cut Bank and two in Kevin-Sunburst.

Lance Creek had one recompletion, Continental 1 Emil Rohlff, for 528 bbl., and one completion, Ohio 19 Carrie Putnam, for 230 bbl. Montana-Dakota Utilities completed two small gas wells in Cedar Creek, Cut Bank had one small well, and Kevin-Sunburst three, the best being Kevin Land 4 Leach for 70 bbl.

COLORADO

El Paso County

F. F. Hintze 1 State ..... CEL SE SE 16-11s-60w
S.D. 1,990 ft. to renew leases.

Jefferson County

Ruby Hill 1 Braden ..... SE SE SE 24-4s-69w
T.D. 4,814 ft., lowering 4¾-in. at 4,790 ft.

La Plata County

E. B. Klem 1 Olbert ..... NW SW 9-35n-12w
S.D. 4,050 ft., account weather.
Nick Spatter 1-X Bryce ..... SW SW 31-33n-9w
Drilling 4,445 ft. in hard sand.

Larimer County

E. P. Gallup 1 Hanson ..... C SE NW 36-10n-71w
T.D. 312 ft., water cased off with 8¼-in. preparatory to resume under new contract.

Las Animas County

Barney Oil 1 Dutto-Marchisio ..... NW NW 32-33n-62w
S.D. 1,218 ft.

Logan County

West Plains 1 Sheldon ..... SE NW SW 3-10n-55w
S.D. 3,310 ft., negotiating for rotary contract.

Moffat County

Mountain Fuel Supply 7 Wilson ..... NE SW NW 23-12n-100w
T.D. 2,341 ft., testing.
Mountain Fuel Supply 3 Musser ..... CNL NW SW 5-11n-97w
Coring 4,785 ft.

Rio Blanco County

Texas Co. 6 Unit ..... NW NE SE 27-3n-94w

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Wyoming			
Oil wells: Completions	1	528	5,165
Recompletions	1	230	5,490
Total	2	.....	10,655
Montana			
Oil wells: Cut Bank	1	25	2,908
Kevin-Sunburst	3	88	4,996
Gas wells	2	.....	2,920
Total	6	.....	10,824

WYOMING

Big Horn County

Ohio 2-A Hoskins ..... SE SE SE 15-56n-97w
Rig. Waiting on equipment.
McDonald & Curtis 1 Orchard ..... SE NW 24-51n-93w
S.D. 1,235 ft., weather.
N. B. Ketchersid 1 Mann ..... SW SW SW 11-55n-97w
T.D. 625 ft., preparing to run 10-in.

Carbon County

Sinclair-Wyoming 17-A Wertz ..NE NE NW 7-26n-89w
Cemented 7-in. on top Tensleep at 5,899 ft., top Sundance 4,140 ft.
Sinclair-Wyoming 19-A Wertz ..... SE SW SW 6-26n-89w
Drilling 5,796 ft., top Sundance 4,125 ft.
Ohio 13 State ..... NW NE 34-20n-78w
Drilling 1,147 ft.
Sinclair-Wyoming 22 Wertz ..... SE SE SE 1-26n-90w
T.D. 457 ft., moving in heavy rotary.
Sinclair-Wyoming 5-C Mahoney ..C NW SE 34-26n-88w
Drilling 3,323 ft.

Fremont County

Indian Oil, agent, 2 Tribal ..... SW SW NW 23-6n-2w
Drilling 1,061 ft., water at 438-85 ft.
V. M. Kirk 2 Tribal ..... NW NE SE 22-6n-2w
Drilling 169 ft., 12½-in. at 48 ft. corrected location.

Hot Springs County

Shot, Sheperson & Kitteson 1 Daly State ..... SW SW NW 16-43n-92w
Spudded.
J. W. Bales 1 Government ..CWL NW SE 21-42n-90w
T.D. 972 ft., P.B. to 900 ft., redrilling.

Natrona County

Advance in crude-oil posted prices which went into effect in a number of Rocky Mountain fields as of April 1 did not include any change in Salt Creek. The last posting for that field was effective Oct. 11, 1938, and was based on the Mid-Continent gravity scale of 86 cents for below 29° and increasing up to $1.10 for 40-gravity and above. A unit plan for the operation of Salt Creek went into effect Sept. 1, 1939. No official explanation for departure from former custom is available.

Prices in a number of other fields are based on the Salt Creek scale, and as a result no change in these areas was announced. These fields are Cole Creek, La Barge, Midway, Dutton Creek, Iron Creek, Lost Soldier, and Teapot in Wyoming, and the Moffat field in Colorado. East Mahoney is based on 10 cents below Salt Creek, and Wertz and Mahoney take a price of 20 cents below. Big Muddy prices also are based on Salt Creek, and accordingly the Continental Oil Co. did not post any change for that district.

Iba Development No. 1 ..... C NE SE 25-32n-82w
Drilling 320 ft., first report, Iba district.
Investors Oil 32 Government ..... SE SE NE 3-33n-89w
Drilling 1,153 ft.
K. S. Albert 1 Young ..... NE SE 25-32n-82w
Drilling 310 ft.
Summit Oil 2 Government ..... NW NE NE 21-33n-80w
T.D. 935 ft., running 8¼-in. to bottom.

Niobrara County

Lance Creek had one completion, one recompletion, and one near completion. Continental 1 Emil Rohlff, CSL SE NW 32-36n-65w, was recompleted at 5,165 ft. for 528 bbl. in 24 hours from the Leo, flowing through the 4¾-in. set at 5,120 ft. It was completed in the Sundance at 3,967 ft. in 1936 for 50 bbl. a day.

Ohio 19 Carrie Putnam, C W½ NW 4-35n-65w, was completed at 5,490 ft. in the second Leo at 5,450-90 ft. for 230 bbl. of oil and 25 bbl. of water in 24 hours. Top of first Leo was at 5,313 ft. and 7-in. at 5,337 ft.

Ohio 7 Converse Sheep, an old well deepened from the Sundance, is a near completion at 5,385 ft., total depth. It had water in the third Leo at 5,270-5,338 ft., and plugged back and swabbed 258 bbl. in 14 hours through perforations at 5,160-5,240 ft.

Argo Oil 10 Ford ..... SE SE NW 33-36n-65w
Drilling 581 ft., 11¾-in. at 310 ft.
Continental 13 O. Rohlff ..... SE SE SE 31-36n-65w
Building rig.
Continental 8-A Schuricht ..... NW NE SE 6-35n-65w
Drilling 554 ft., 10¾-in. at 304 ft.
Ohio 4 Richard & Comstock ..... NE SW 32-36n-65w
Rig.
Ohio 20 Putnam ..... NW SW 33-36n-65w
Spudded.
Ohio 7 Converse Sheep ..... C NW SE 32-36n-65w
T.D. 5,383 ft., 5-in. at 5,382 ft., testing.
Continental 1 Rohlff ..... CSL SE NW 32-36n-65w
T.D. 5,165 ft., cemented 4¾-in. at 5,120 ft.

Park County

Enalpac 3 Pauline O.P.C.-1 ..... SW SE SE 5-51n-100w
Drilling 2,815 ft.
Stanolind 6 Rosenberg ..... NW NW NW 25-58n-98w
T.D. 2,820 ft., testing.

Sublette County

Marvel Oil 1-L Government ..... SE SE SE 28-27n-113w
Rigging, first report, La Barge field.
Sunset Oil & Gas 1 ..... NE SE NE 10-29n-113w
Running 12½-in. to 248 ft., first report, Big Piney district.
Texas 1-K Government ..... NW SW SW 27-27n-113w
Location.
North La Barge Oil 7 Gov't ..... C SE NE 28-27n-113w
Location.
Charles Lackey 1 Government NE SE SW 33-27n-113w
Drilling 1,650 ft.

Sweetwater County

Rocky Mt. Drlg. Co. 1 State SW SW SW 36-20n-104w
Coring 4,727 ft., test of Nuggett at 4,168-4,223 ft., showed some gas and sulfur water.
Sinclair-Wyoming 100-A ..... NE NE NE 10-26n-90w
Building rig.
Vermillion Oil 1 Government ..SW NE NE 6-12n-99w
Location.
Sinclair-Wyoming 96-A ..... NE SE NE 10-26n-90w
Drilling 3,864 ft., top Sundance 1,970 ft., Alcova 2,745 ft.

Uinta County

Stove Creek Oil 2 Government C SW NW 26-14n-119w
T.D. 1,352 ft., fishing.

Weston County

Lem Johnston 1 ..... NW SW 24-44n-63w
Sidetracking casing below 3,300 ft., Mush Creek district.
John Brorphy 1 Hansen ..... NW NE NW 13-44n-63w
T.D. 2,215 ft., running 5⅛-in. to carry to top of sand.
Updike Brothers 4 ..... CWL SW SW 30-46n-63w
Cemented 8¼-in. at 585 ft.
Riggs Oil 4 State ..... CNL NE SE 16-46n-64w
Drilled into Dakota at 3,465 ft. and found water, will drill deeper.
Osage Trust 1 fee ..... NE SW SE 10-46n-63w
Cored first Leo at 2,155-2,220 ft. and failed to find production, will test lower Leo and Bell sands.

MONTANA

Cascade County

Bushford Petroleum Synd. 1 Shannon-Roberts ..... C SW NE 12-20n-1e
Drilling 3,292 ft. in lime.

Fallon County

Montana-Dakota Utilities 151 Government, C NW NW 17-4n-62e, Cedar Creek field, was completed in the Eagle sand at 1,140-1,440 ft. for 439,000 cu. ft. of gas with a pressure of 422 lb. The 5½-in. was set at 1,143 ft. and 4½-in. perforated liner on bottom.

Montana-Dakota Utilities 153 Government, lot 1, 29-4n-62w, made 300,000 cu. ft. through perforated liner set on bottom from the Eagle sand at 1,179-1,480 ft.

Montana Development 1 Seargents ..... SW SW SW 32-8n-60e
Drilling 900 ft. in Pierre shale.

Fergus County

Tony Co. 2 Scharf ..... NW SE NW 36-22n-17e
Drilling 499 ft.

Glacier County

The only completion in Cut Bank was a small well in Glacier Production 6 Van Ormer, CSL SE 8-33n-5w, which had 200 ft. of oil in the hole at 2,908 ft., and was not given a swabbing test. The Sunburst at 2,795-2,830 ft. had a show of oil at 2,810-21 ft. Cut Bank was at 2,447-90 ft. with a shale break at 2,878-89 ft. Main pay was at 2,876-78 ft.

Hannah-Porter 2 Tribal-189 ..... SE SE SE 19-32n-5w
Moving in, first report.
Glacier Prod. 3 Connelly ..... C SE SW 6-33n-5w
Moving in, first report.
Texas 2 Jones ..... C SE NW 6-33n-5w
Moving in, first report.
Montana Headlight 4 Williams SW SW NE 11-34n-6w
Location, first report.
Kullberg Oil 2 Tribal-185 ..... NW NW NW 19-32n-5w
Spudded.
Glacier 4 Lookhoff ..... SE SW SE 33-33n-5w
Spudded.
Santa Rita 13 Tribal ..... CSL NE SW 10-35n-6w
Drilling 950 ft., top Colorado 555 ft., 10-in. at 571 ft.
Texas 2 Willis ..... SW SW SW 20-32n-5w
Drilling 1,200 ft.
Ed Reagan 1 Tribal-194 ..... CEL SE NE 22-37n-7w
T.D. 3,869 ft., moving in spudder.

Hill County

Cobb-Yale 1 Government ..... C SW NE 19-37n-15e
Spudded and S.D., moving in rotary, Signal Butte.
Edwards-Callison 1 Hanson CWL SW NW 25-35n-15e
Location, will go to Eagle sand at 1,200 ft. in search of municipal gas supply for Havre.

Park County

Security Petroleum 1 Weeis ..... SE SE SW 20-2s-11e
Rigging up.

Teton County

R. C. Tarrant 1 Kellogg ..... SE NW NE 33-27n-5w
Rigging up cable tools.

Toole County

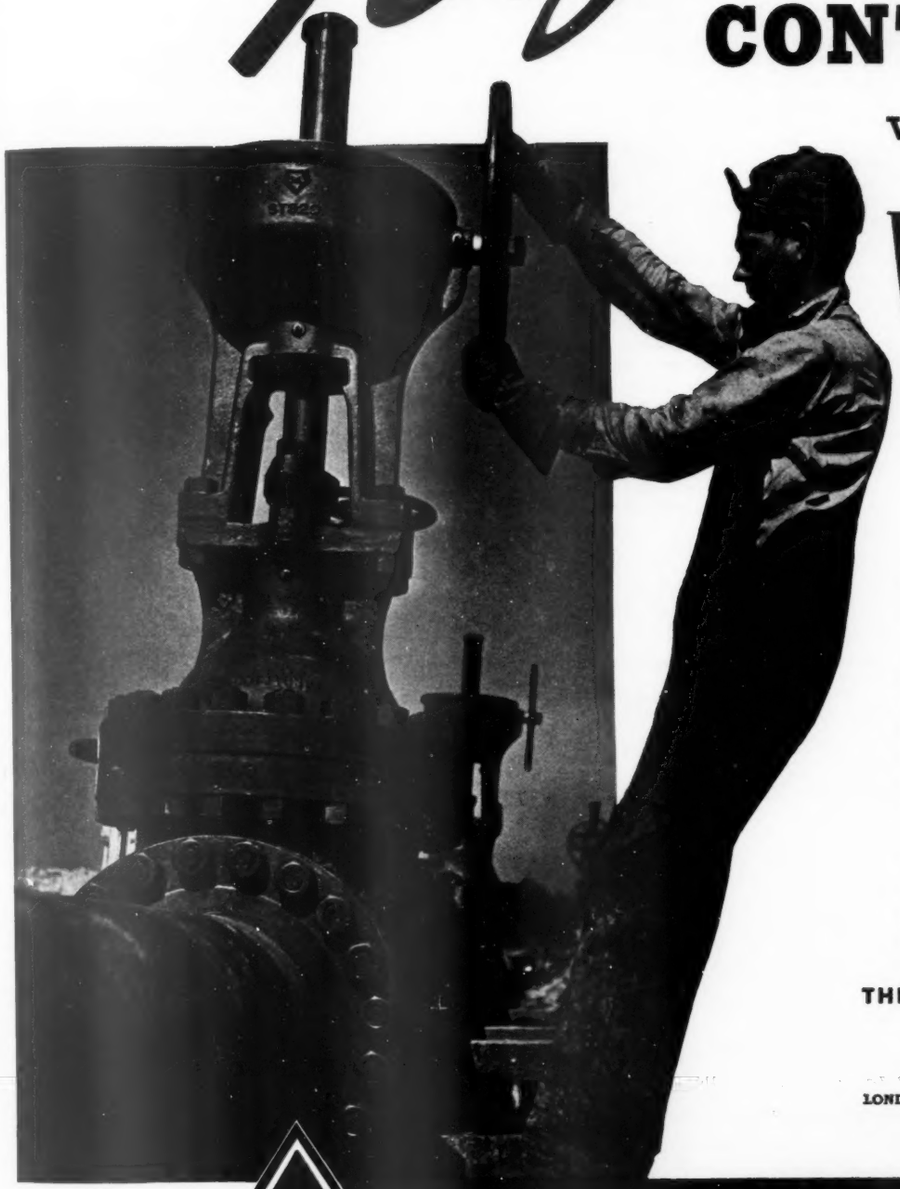
Kevin Land Co. 4 Leach, C SE NE 31-35n-3w, Kevin-Sunburst, made 70 bbl. per day from the Madison at 1,772 ft., total depth, after acidizing with 500 gal. It made 5 to 6 bbl. a day natural before treating. The 7-in. is at 1,669 ft.

Twinfields Oil 3 Government, CNL NE NE 29-35n-3w, made 6 bbl. a day on the pump from the contact at 1,790-93 ft., after acidizing with 500 gal.

Big West Oil 17 Allen, SE SE SW 31-35n-1w, was completed in the contact at 1,428-31 ft., and pumped 12 bbl. a day. Before acidizing with 500 gal. it made ½ bbl. a day.

(Continued on Page 118)

Perfect CONTROL with WESTCOTT PIPELINE VALVES



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CONTINENTAL

SERVING THE OIL AND GAS INDUSTRIES

By
NEIL WILLIAMS

Six Coastal Outposts Are Awaiting Production Tests

HOUSTON, Tex., Apr. 21.—Scheduled production tests on outpost wells in proven areas highlighted developments along the Texas Gulf Coast the past week.

West of the Willough Slough area, Chambers County, Sun 3 Jackson is bottomed at 8,294 ft., and 7-in. casing was cemented on bottom, preparatory to testing sand at intervals from 8,137 to 8,216 ft., which carried oil and gas. The well is the most westerly drilled on the structure. It is in Section 126, T.&N.O. Survey, about 1,700 ft. northwest of the company's 1 Jackson.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Lolita	5	755	28,403
West Ranch	1	183	5,562
Other fields	4	910	25,706
Gas wells	1	.....	5,572
Dry holes: Fields	2	.....	14,261
Wildcats	1	.....	7,518
Total	14	.....	87,022

Extensions Ready to Test

In the same county and about 2,400 ft. north of production in the Seabreeze field Sun 3 Seabreeze is bottomed at 8,879 ft., with 5½-in. casing cemented on bottom. Location is in the H.T.&B. Survey 102.

In the Fig Ridge area, Sun 1 Mackelburg, approximately 1,000 ft. north of production, is bottomed at 8,851 ft., and casing is expected to be cemented for testing after broken sand and shale with an oil and gas odor was logged at intervals from 8,800-50 ft.

MARTHA FIELD EXTENDED.—Although no gage was available, Stanolind Oil & Gas Co. marked up a major extension to the Martha field, Liberty County, as 5-C Seaberg flowed pipe-line oil through perforated casing at 8,181-90 ft. The well is not shut in for storage. This well is in the West Liberty town survey in Section 15. Total depth is 8,633 ft. and 5½-in. casing was cemented at 8,244 ft. The Discorbis Yeguaensis was topped at 8,093 ft., and the Eponides Yeguaensis at 8,225 ft.

Hardin Discovery Tested

Republic Production Co. 1 Elliott fee, the discovery well of a new producing area, 1½ miles southwest of the Silsbee field, Hardin County, flowed 20 bbl. of oil per day through a 3/32-in. choke on preliminary test. The Cockfield was topped at 6,785 ft., Discorbis Yeguaensis at 6,922 ft., and the Eponides-Yeguaensis at 6,988 ft. The well is producing from sand topped at 6,918 ft., and bottomed at 6,923 ft.

JACKSON COUNTY.—Southwest of the discovery well of the West Ganado field, Jackson County, Pure Oil Co. was preparing to make a production test of 2 Spacek, ¼ mile from proven production. Total depth was 6,815 ft., and 5½-in. casing was cemented at 6,044 ft. A 20-minute drill-stem test showed 16 lb. working pressure, and recovered 372 ft. of oil-cut mud and 1,395 ft. of salt water. Sidewall cores recovered sand with an oil odor at 5,874-5,994 ft. These showings are in addition to the new 4,700-ft. horizon, where a drill-stem test the previous week recovered several hundred feet of oil. A test of the deeper sands is expected to be made and if this fails, the hole will be plugged back and completed in the 4,700-ft. horizon.

CLODINE WILDCAT.—Location for a wildcat to be drilled in Fort Bend County was announced by Providence Oil Co. which is moving in material for 1 Hatfield, a projected 8,000-ft. test about 2 miles west of Clodine in the H. B. Brown Survey. Actual measurements are 1,822 ft. south of the railroad and 2,640 ft. from the west line of the survey.

HALLS BAYOU.—In the Halls Bayou area, Brazoria County, mechanical trouble continues to retard the completion of Strake 1 Griffith, which is preparing to plug back and sidetrack for the second time. Total depth of the first sidetracked hole was 10,410 ft., and preparations were being made to test when the tubing collapsed, and the crew was unable to recover.

Possible Fannett Extension

A possible extension and new-sand discovery for the northwest flank of the Fannett dome, Jefferson County, was indicated as Superior Oil Co. of California cemented 7-in. casing in 1 Bordages, several hundred feet north of production. Total depth is 10,078 ft., and casing was cemented on bottom. This well attempted to blow out the previous week at 9,922 ft., and the hole may be drilled deeper before the test is made. Main production is from sand at 8,200-8,300 ft. Gulf 9 Bordages, the most westerly well drilled on the north flank, recovered salt water on a production test at 8,383-90 ft., and at the close of the week the well was being retested through perforated casing at 8,325-37 ft.

HARRIS LOCATION.—North of the Bammel field, Harris County, E. R. Kirkpatrick staked location for 1 Otto Schonemann, a 6,500-ft. test located 467 ft. from the northeast line and 1,533 ft. from the northwest line of a 40-acre tract in the D. Harmon Survey.

BROOKSHIRE AREA.—In the Brookshire area, Waller County, Kirby Petroleum Co. et al 1 Donnigan is coring below 5,800 ft., and should reach the contract depth of 6,000 ft. by the end of the week. The Textularia Hockleyensis was topped at 4,756-87 ft. No shows of oil or gas have been reported.

TEXAS GULF COAST COMPLETIONS

Brazoria County

Chenango field: J. Newton Rayzor 3 Christian, dry, T.D. 9,026 ft.
Rowan field: Humble 6 Hubbard, 191 bbl., ⅛-in. choke, perf. casing 8,532-38 ft., T.D. 9,100 ft.

Chambers County

Wildcat: Dick Schwab 1 Fisher, dry, T.D. 7,518 ft.

Fort Bend County

Thompson field: H. M. Naylor 5-C Hampil, 166 bbl., ⅛-in. choke, perf. casing 7,892-96 ft., T.D. 7,900 ft.

Harris County

Pierce Junction field: Rio Bravo 17-B J. J. Settegast, 423 bbl., ¼-in. choke, top sand 3,331 ft., T.D. 3,348 ft.
Tomball field: Humble-Magnolia 7 Blocher, gas well, top sand 5,506 ft., T.D. 5,572 ft.

Jackson County

Lolita field: Luling 1 Seale, 99 bbl., 7/64-in. choke, perf. casing 5,940-43 ft., T.D. 5,943 ft.
Magnolia 1 Abbott, 138 bbl., 7/64-in. choke, sand 5,936-38 ft.
Magnolia 9 Mitchell, 182 bbl., 9/64-in. choke, sand 5,931-37 ft., T.D. 5,937 ft.
Magnolia 11 Mitchell, 165 bbl., 11/64-in. choke, sand 5,289-95 ft., T.D.
Magnolia 16 Mitchell, 171 bbl., 9/64-in. choke, sand 5,285-92 ft., T.D.
West Ranch field: Magnolia 143-A West Ranch, 183 bbl., 9/64-in. choke, perf. casing 5,551-59 ft., T.D. 5,562 ft.

Wharton County

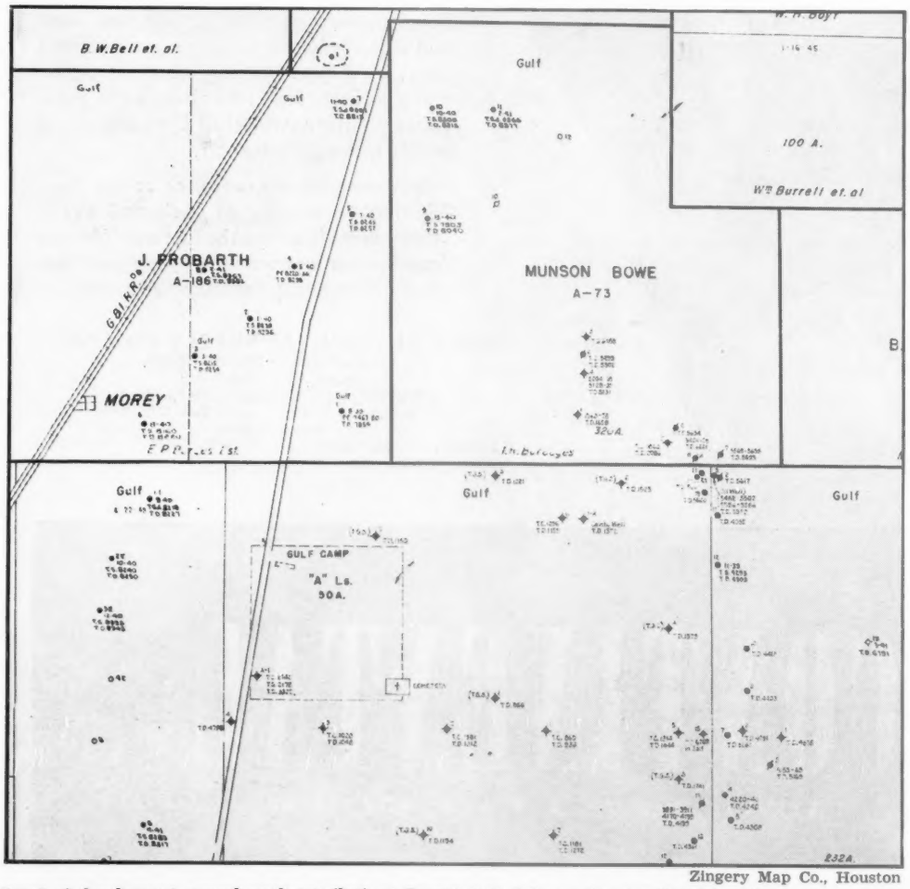
Hilje field: Sayre 1 Appling, dry, T.D. 5,235 ft.
Withers field: Texas 93-C Pierce 130 bbl., ⅛-in. choke, T.D. 4,373 ft.

TEXAS GULF COAST DRILLING REPORT

Brazoria County

Pure 1 Greenameyer, Manor Lake area, drilling shale 7,765 ft.
Pan American 2 Kountz, southeast flank Damon Mound, drilling shale 2,315 ft.

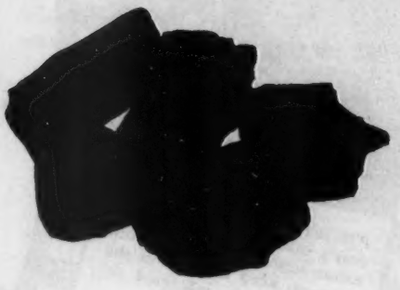
(Continued on Page 119)



Zingery Map Co., Houston

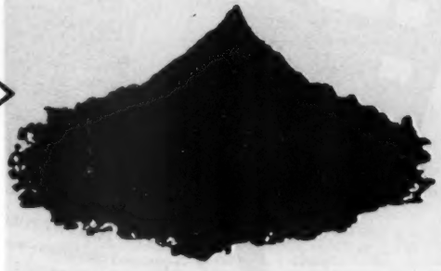
Trend of development around northwest flank of Fannett field, Jefferson County. Most interesting well at present is deep test on north flank which has cemented casing below 10,000 ft.

BATCH PRESSURE FILTER CAKE



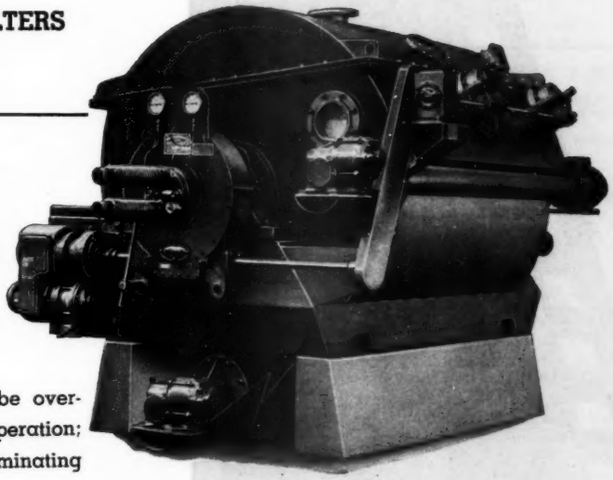
Lumpy, usually sticky, cake generally difficult and costly to handle; oil loss approximately double that of loss with Oliver Precoat Cake.

OLIVER PRECOAT CAKE



A disintegrated and powdery material easily handled by screw or other simple conveying device; requires no manual handling; contains about 50% less oil than pressure filter cake.

Lower oil loss in cake
Lower operating cost
Lower maintenance
} **justify changing over to OLIVER PRECOAT FILTERS for contact filtration**



OF the several contrasting items between batch pressure filter operation and Oliver Precoat Filter operation, the above are outstanding and represent real savings in time, money and yield. Oil saved in your contact step in Precoat operation is sufficient to pay for this modern installation in a remarkably short period.

Other advantages of the Oliver Precoat Filter are not to be overlooked. Consider well the importance of continuous, automatic operation; of high and uniform filtering rate; of clarity in one step; of eliminating constant supervision and control; of a clean filter station.

Oliver Precoat Filters are going places in oil refinery operation . . . not only on contact filtration but on other refining steps.

OLIVER UNITED FILTERS INC.

NEW YORK, N. Y. CHICAGO, ILL. OAKLAND, CALIF.

Factories: Hazleton, Pa. — Oakland, Calif. — Orillia, Ont. Canada

OLIVER UNITED FILTERS INC.

RIGHT AT THE RIG, Lone Star's oil-field service organization studies cementing problems—to keep the men at the mill constantly informed on oil-field requirements.
TESTS FOR NEEDED PROPERTIES and qualities—such as length and ease of pumpability at high temperatures—are part of daily routine.
NEAT-CEMENT TEST SPECIMENS are cured at 140, 170 and 200° F., to approximate the various conditions encountered in oil-well service—
AND STRENGTH, SO ESSENTIAL in oil-well cementing, is constantly checked. Work like this goes on all the time—we call it "keeping pace with progress."

CEMENTS FOR OIL INDUSTRY SERVICE

—BACKED BY

CONTINUING RESEARCH IN THE FIELD AND LABORATORY

Day in and day out, Lone Star's oil-field organization studies cementing problems right at the rig, to keep an accurate line on the Oil Man's requirements. Close contact with problems in the field enables us to make cements with the properties and qualities needed to meet changing conditions of oil-industry service.

That is why 'Starcor' and 'Incor' deserve to be called the Oil Man's Cements—because they are made to measure for today's oil-industry needs. Use 'Starcor' for deep wells, greater length and ease of pumpability at high temperatures. Use 'Incor' for wells of moderate depth—earlier drill-out, wells on production quicker. Insist on 'Starcor'* or 'Incor'*—it'll pay you well. *Reg. U. S. Pat. Off.

LONE STAR CEMENT CORPORATION

DALLAS: Santa Fe Building • • • • HOUSTON: Shell Building

Clinton Test in Kanawha Co. Gets Small Gas Showing

By STAFF CORRESPONDENT

PITTSBURGH, Pa., Apr. 21.—During the past week in the lower eastern fields, 19 operations were reported of which seven were dry, eight gas wells, and four oil producers.

WEST VIRGINIA

In Kanawha County Columbian Carbon Co., deepening the Oriskany gas well on the Copenhaver heirs farm in Elk district, topped the Clinton sand at 6,336 ft. and it extended to 6,418 ft. with gas shows at 6,393 ft., 6,397 ft., 6,406 ft., and 6,417 ft. The total gage was 87,000 cu. ft.

In Monongalia County Hope Natural Gas Co. is drilling at 1,960 ft. in the test on the H. C. Greer lease in Morgan district.

Calhoun County

Sheridan district: M. F. Crawley Gas Corp. 2 M. N. Sommers, 150,000 cu. ft. gas, Berea, T.D. 2,600 ft.

Lincoln County

Union district: Pauley & Pridemore 1 Minnie Adkins, drilled deeper, start 2,319 ft., brown shale 3,158-3,487 ft., gage 88,000 cu. ft., shot 2,992-3,429 ft. with 5,000 lb. Dentonite, T.D. 3,412 ft.

Marion County

Lincoln district: J. I. Eddy & Co. 1 William Barrackman, 500,000 cu. ft. gas, Big Injun sand, T.D. 1,853 ft.

Pleasants County

Grant district: E. C. Hartman 2 Hammett heirs, ¼-bbl. pumper, second Cow Run sand, T.D. 440 ft.
E. C. Hartman 3 Hammett heirs, 3 bbl., first Cow Run sand, T.D. 357 ft.

Ritchie County

Grant district: F. R. Morrison 1 A. R. Douglas, 2 bbl. and 45,000 cu. ft. gas, Squaw sand, T.D. 2,020 ft.
F. S. Deem 1 A. D. Killingsworth, 21,000 cu. ft. gas, Injun sand, T.D. 1,990 ft., will abandon.
Reno Oil Co. 6 Lloyd and Mary Hill, ½ bbl. and 21,000 cu. ft. gas, Injun sand, T.D. 2,192 ft.
Hope 6334 W. H. Mason, drilled deeper, dry through Injun sand, T.D. 1,991 ft., will abandon.
Murphy district: A. H. Jackson 2 Elizabeth Campbell, no sand to 1,040 ft., dry, will abandon.

Roane County

Curtis district: H. S. Boreman 1 Richard E. Anderson, dry, Salt sand, T.D. 1,835 ft.

Wayne County

Westmoreland district: Ceredo Oil & Natural Gas Co. 1 R. W. McCoy, 84,000 cu. ft. gas, Big lime 1,010-1,135 ft., Big Injun 1,135-1,253 ft., 1,800-42 ft., brown shale 2,227-2,624 ft., gas 2,300 ft., shot 2,227-2,624 ft., T.D. 2,624 ft.
Union district: West Virginia Gas Corp. 2 Carl Spurlock, 158,000 cu. ft. gas, Big lime 1,252-1,420 ft., Big Injun 1,431-1,512 ft., Berea 2,051-78 ft., brown shale 2,415-2,950 ft. and 3,158-3,226 ft., gas 2,627 ft., 2,640 ft., 2,755 ft., and 2,770 ft., shot 2,418-3,228 ft. with 7,300 lb., T.D. 3,228 ft.
Hale-Lowe-Francis 2 Perlie Brumfield, dry, Big lime 1,168-1,320 ft., Big Injun 1,375-1,414 ft., Berea 1,945-70 ft., brown shale 2,570-2,874 ft., show gas 2,450 ft., shot 2,386-2,891 ft., T.D. 2,891 ft.

ORISKANY GAS FIELD

No wells were completed in Kanawha County.

DRILLING

Poca district: United Fuel 4984 C. O. Slater, Corniferous lime 4,929 ft., Oriskany 5,044 ft., drilling 5,071 ft.
Columbian Carbon 1 G. B. Robinson, Corniferous lime 4,874 ft.
United Fuel 4994 A. W. Price, Corniferous lime 5,012 ft.

Jackson County

Ripley district: United Fuel 4981 S. R. Miller, drilling in Oriskany sand at 5,260 ft., with good gas showing.

NEW WORK

Boone County

Sherman district: Pure 83 Federal Coal Co., elev. 1,237.47 ft.

Braxton County

Birch district: Pittsburgh & W. Va. 7792 Bessie Mollahan, elev. 1,162 ft.

Calhoun County

Center district: Hope 8540 Allen Hardman, elev. 676 ft.
Hope 8538 Lee Gainer, elev. 1,139 ft.
Hope 8536 Lottie McEndree, elev. 921 ft.
Sherman district: Hope 8539 Cora Stump, elev. 879 ft.
Washington district: Hope 8547 W. C. Conley, elev. 1,019 ft.
Hope 8549 Bee Hopkins, elev. 986 ft.

Gilmer County

Center district: Hope 8554 Louis Bennett, elev. 894 ft.
Troy district: P. G. Loudin 1 T. C. McQuain, elev. 954 ft.

Harrison County

Sardis district: E. & C. Gas Co. 1 O. C. Strothers, elev. 1,142 ft.

Jackson County

Ripley district: G. L. Cabot 8 J. L. McLean heirs.
Washington district: G. L. Cabot 1 R. P. Shinn heirs.
United Carbon 8 Elizabeth W. Perkins.

Kanawha County

Poca district: G. L. Cabot 17 Putnam Co.
G. L. Cabot 6 D. Holmes Morton.
G. L. Cabot 3 Poca Coal Land Co., elev. 805.38 ft.
Union district: G. L. Cabot 1 Edna V. Bailey.

Ritchie County

Murphy district: L. P. Bickel 5 Ben W. and Leland S. Morris, elev. 1,062 ft.

Roane County

Walton district: Clifton O. & G. Co. 1 G. A. Cummings, drill deeper.

Upshur County

Buckhannon district: Pittsburgh & West Virginia 7838 P. D. Brake, elev. 1,468 ft.

Wayne County

Union district: Owens, Libby-Owens 2 J. D. Baker, elev. 795.8 ft.
Owens, Libby-Owens 1 Willa J. Self, elev. 790.1 ft.

Wetzel County

Proctor district: Hope 8535 Valentine Blatt, elev. 1,245 ft.

SUMMARY OF COMPLETIONS

West Virginia

	No.	Bbl.	Footage
Oil wells	4	6	5,009
Gas wells	4	*0.9	10,305
Dry holes	4	.....	9,747
Total	12	.....	25,061
Recompletions	1	*0.1	.....

Southwest Pennsylvania

Gas wells	4	*1.1	11,354
Dry holes	3	.....	7,667
Total	7	.....	19,021

*Million cu. ft.

SOUTHWEST PENNSYLVANIA

On Chestnut Ridge in South Union Township, Fayette County, New Penn Development Co., William E. Snee et al bottomed 3 Summit Hotel (Heyn) at 6,788 ft., or 223 ft. below the top of the Oriskany sand. There, apparently, was no gas in the Oriskany sand but the gas from the Onondaga chert bed continues well over 1,500,000 cu. ft. a day. Here, this company is now starting to clean out 1 Summit Hotel which was shot earlier in the year and which had bridged.

Peoples Natural Gas Co. is having difficulty straightening a crooked hole in 4 Piedmont Coal Co. It was filled back to 4,822 ft. and shot and then cemented. It is now drilling at 4,842 ft. They are hauling in material for 5 Piedmont Coal.

In North Union Township Wasson & Co. et al topped the Onondaga lime at 6,993 ft. in 3 J. H. Sorg and ran casing to 6,995 ft. which has been cemented in and drilling will resume within the week.

On Laurel Ridge in Stewart Township, Fayette County, New Penn Development Co. et al have been slowed down all week trying to drill up the bailer dump rod lost in the test on the Gregg L. Neel farm at a depth of 8,069 ft. In Maryland these operators have made little progress in the wildcat on the Humberson farm on the Accident dome in Garrett County. The hole at the point of divergence was shot and is now being cleaned out.

On Big Knob in New Sewickley Township, Beaver County, L. D. McMichaels et al have reached 4,800 ft. in the test on the Elmer Pflug farm and making good time. In Center Township St. Joseph Lead Co. has the rig standing for the Oriskany test on the J. P. Koehler heirs farm.

Armstrong County

Parks Township: Peoples 1 William Keppler heirs, 94,000 cu. ft. gas, Bradford sand, T.D. 3,412 ft.

Fayette County

Menallen Township: J. H. Cornwall 1 C. F. Newman 860,000 cu. ft. gas, gas sand 705 ft., gas 715 ft., T.D. 727 ft.

Greene County

Jackson Township: Cleveland-Cameron Oil & Gas Co. 1 Cleveland Morris, 94,000 cu. ft. gas, Fifty-foot sand, T.D. 3,463 ft.
Monongahela Township: Brummage et al 1 Robert Whooley, 73,000 cu. ft. gas which blew down to 29,000 cu. ft., Bayard sand 2,890-2,915 ft., gas 2,890-91 ft., T.D. 3,008 ft., will abandon.

Washington County

South Franklin Township: Foley & Williams 3 Clarence Vankirk, dry, through gas sand, T.D. 1,388 ft.
West Bethlehem Township: Carnegie 3 Chartiers-Southern R.R., dry through Elizabeth, T.D. 3,271 ft.

Westmoreland County

Allegheny Township: Peoples 1 Howard Wise, 68,000 cu. ft. gas, Bradford sand 3,310-23 ft., gas 3,312 ft., T.D. 3,752 ft.

DRILLING

Armstrong County

Boggs Township: J. K. Sharp & Co. 1 James Sefton, 60 ft.
Burrell Township: T. W. Phillips 3 S. Wagley heirs, building rig.
Cowanshannock Township: William McCollins 1 A. L. McCullough, S.D. 1,215 ft.
Equitable 2 William Carroll, 1,362 ft.
Equitable 3 William Carroll, building rig.
Kiskiminitas Township: Peoples 1 R. P. Hunter, 3,293 ft.
Kittanning Township: Local Co. 1 S. E. Heilman, 3,507 ft.
Equitable 1 George Rohrer, location.
L. L. Livingood 1 H. Wright, 141,000 cu. ft. gas, Speechley and Tiona sands, drilling 3,150 ft.
Monor Township: Local Co. 1 Claude Wray, location.
Plum Creek Township: Peoples 1 Quinter Boyer, 1,825 ft.
T. W. Phillips 2 J. P. Dunmire, location.
James Wright 1 Thomas St. Clair, building rig.
Red Bank Township: Local Co. 1 Samuel Kunselman, 1,620 ft.
South Bend Township: Equitable 2 Margaret Claypool, 140,000 cu. ft. gas, Murraysville sand, drilling 1,755 ft.
Wayne Township: John Wray et al 1 Ira Foster, 275 ft.
R. C. Galbraith et al 1 A. Rupp, rig standing.

Clarion County

Piney Township: Frank Shreffler 1 L. E. Gourley, reaming 830 ft.
Red Bank Township: T. W. Phillips 1 Daniel Wolfgang, 2,306 ft.

Fayette County

German Township: Greensboro Gas Co. 1 Stephen Haningosky, 2,510 ft.
Menallen Township: Boyd O. & G. Co. 1 Homer D. Smith, location.
J. H. Cornell 1 Chester Rockwell, location.
Nicholson Township: Wahler-Powers 1 Melvin Woodrich, location.
Wahler-Powers 2 Geneva Supply Co., 1,243 ft.
Nollem 1 J. D. McCann, 2,310 ft.
Duquesne 2 J. Cover, 1,930 ft.
Duquesne 1 Vincent Ryeczek, location.
C. V. Emmers 1 Joseph Vaslaviski, top Big Injun 1,285 ft., gas 1,300 ft., gage 300,000 cu. ft., rig caught fire, building new one, S.D. 1,300 ft.
Springhill Township: Marker Stephenson 1 J. Brojkovitch, S.D. 150 ft.

Greene County

Center Township: Manufacturers 1 E. W. Wood, spudded in.
Devine et al 1 Hugh Smith, 3,037 ft.
Cumberland Township: Equitable 1 Nellie B. Gideon, 35 ft.
Jackson Township: Equitable 1 Clara Roberts, 2,650 ft.
Peoples 1 Roy L. Wise, 2,335 ft.
Monongahela Township: Equitable 1 William Hart, 2,100 ft.
D. E. Mayne et al 1 Andrew Kovack, S.D. 2,310 ft.
John Conklin et al 1 F. L. Mestrazar, S.D. 660 ft.
Morris Township: Romney Rutan et al 1 Albert Rutan, 2,560 ft.
Perry Township: Equitable 1 C. D. Wade, 310 ft.
Equitable 1 W. L. Vandruff, location.
Richhill Township: C. L. Sample 1 Henry Dinsmore, location.
Charles Hart et al 1 Ross Galloway, 780 ft.
Springhill Township: H. E. Milliken et al 1 John Minor, 2,400 ft.
Carnegie 1 Jacob Rice, rigging up.
Wayne Township: Lee Wise et al 1 Henry Hixenbaugh, 1,015 ft.
Whiteley Township: H. D. Freeland et al 1 Morris B. Fox, 310 ft.

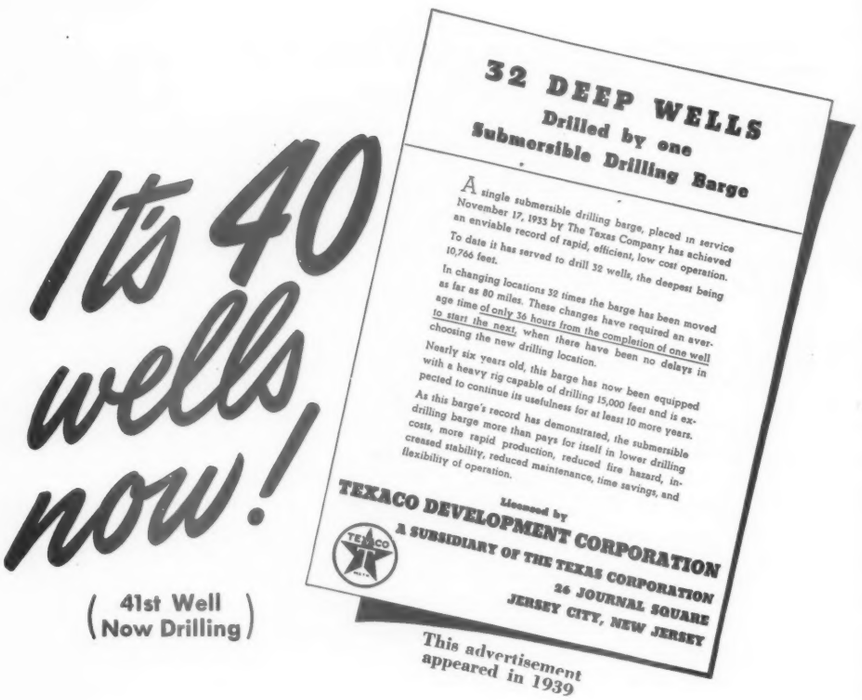
Indiana County

Armstrong Township: T. W. Phillips 1 Mrs. J. P. Craig, building rig.
Brush Valley Township: T. W. Phillips 2 M. J. and S. E. Overdorff, 1,205 ft.
Center Township: T. W. Phillips 1 Helvetia Coal Co., 1,160 ft.
White Township: T. W. Phillips 1 Martha B. Campbell, 452 ft.

Washington County

Amwell Township: Bungard et al 1 Lucille Frazee 1,225 ft.
Deemston Boro: Wherry et al 1 J. P. Phillips, S.D. 347 ft., account mine entry.
Keystone Gas Co. 1 Ula Keys, 840 ft.
Fallowfield Township: Equitable 1 P. B. Irwin, location.

(Continued on Page 144)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(41st Well Now Drilling)
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Nearly six years old, this barge has now been equipped with a heavy rig capable of drilling 15,000 feet and is expected to continue its usefulness for at least 10 more years.
As this barge's record has demonstrated, the submersible drilling barge more than pays for itself in lower drilling costs, more rapid production, reduced fire hazard, increased stability, reduced maintenance, time savings, and flexibility of operation.
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TEXACO DEVELOPMENT CORPORATION
A SUBSIDIARY OF THE TEXAS CORPORATION
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JERSEY CITY, NEW JERSEY
This advertisement appeared in 1939

. . . Drilled by the same Submersible Drilling Barge

NEARLY 8 YEARS OLD, the submersible drilling barge referred to in the advertisement above is still going strong . . . adding to its enviable record of wells drilled and savings effected . . . still good for many years to come.

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Increased Allowables Asked For Heavy-Crude Producers

By
L. P. STOCKMAN

LOS ANGELES, Calif., Apr. 21.—Action of the California Oil Producers' Conservation Committee on a recommendation from its allocation group that higher allowables be assigned to wells producing heavy crude is expected before the end of the month. Consideration received by the producers of heavy crude will have an important influence on the trend of California operations during the next few months. Refining economics are blended into the question of allowables for producers of heavy crude along with the field operating aspects. (See Page 28.)

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: San Joaquin Valley	11	11,720	74,213
Coastal district	2	712	14,750
Los Angeles Basin	4	1,867	19,415
Recomp.: San Joaquin Valley	1	167	.....
Los Angeles Basin	2	520	.....
Dry holes: Wildcats	7	.....	21,858
Fields	1	.....	7,818
Total	28	14,986	138,054

LOS ANGELES BASIN

Demand and supply of heavy-type crudes shared interest this week in California with a completion in the Los Angeles Basin district which extended the productive limits of the Dominguez field ¼ mile to the west. The extension is Hiles Drilling Corp. 1 Grant which flowed 1,500 bbl. of 31.9° gravity oil and 1,500,000 cu. ft. of gas daily from the seventh Callender zone.

The new well has resulted in extensive leasing activities to the west. Consensus is that the producing sand is the same as the seventh Callender zone and that the well is associated with the Dominguez field and not on a new structure. No. 1 Grant is believed to be on the nose of the Dominguez structure and there is a possibility that commercial production may be found west of Main Street, which would extend the structure an additional 1,000 ft. westward.

Hiles Drilling Co., headed by Eddie Hiles and Walter M. Crawford, took over the operation after Gus Pongratz had drilled to the eighth Callender zone, where operations were suspended when this zone proved wet. Hiles Drilling plugged back to 6,000 ft. and went out through a window at that depth. The hole was redrilled to 7,259 ft. and whipstocked to the southeast and found 29 ft. of oil sand.

Hiles Drilling has staked location for a second well south of 1 Grant and it will force Union Oil Co. to undertake offset drilling on the Austin property which adjoins the town-lot area on the east. Several wells may soon start in the subdivided section located immediately east of Main Street and north of Victoria. It is interesting to note that 1 Grant, which was started by Gus Pongratz, was nearly 1 mile west of production when drilling started but subsequent extension of the field by drilling on Union's Austin lease gradually moved the productive limits to the west. There are a number of 1 to 5-acre parcels along Main Street and to the west. If the field extends another ½ mile west several additional wells will be required. It is quite likely that operators will proceed slowly for a time as a 29-ft. oil sand will not and cannot sustain town-lot development even though the sand has plenty of kick.

ATHENS-ROSECRANS.—Operators interested in the Athens section of Rosecrans field were somewhat disappointed with the outcome of Southern California Petroleum Corp. 1 Howard townsite, northwest of the Thorley well, as it produced only 55 bbl. of 32.1°-gravity oil daily from 8,117 ft. This well will be given a pumping test before being considered completed, especially since oil was cut from 1 to 12 per cent. The well was carried to 8,376 ft. but was plugged back to 8,117 ft. prior to completion and the 5½-in. casing perforated at intervals at 7,964-8,117 ft. Cores recovered did not indicate a large well.

WILMINGTON.—Los Angeles City Council has approved a 15-year lease to Anchor Oil Co. on 40 acres of the railway classification yard in the Los Angeles Harbor district, on the basis of 22½ per cent royalty for wells producing more than 60 bbl. daily and 16⅔ per cent for wells producing less than that amount. Anchor already has four completed wells in the classification yards under a previous lease. This property should yield Ranger zone wells and is considered as proven for wells capable of pumping around 150 bbl. daily. Location of all wells must be approved by the Harbor Department and not be drilled where they may interfere with operations in case the department desires to use the yards as a classification center as was the original purpose.

LOS ANGELES BASIN COMPLETIONS

Centinella District

Vanguard Oil Co. 1 Centinella 29-2s-14w
Dry. Elev. 102 ft. T.D. 1,048 ft. 13⅜-in. surface string 800 ft. May deepen later. Los Angeles County.

Costa Mesa District

Thompson, M. N., 1 Costa Mesa 9-6s-10w
Dry. Elev. 100 ft. T.D. 5,645 ft. Orange County.

Dominguez Field

Havenstrite, R. E., 5 Larronde 32-3s-13w
Dry. Elev. 49 ft. T.D. 7,818 ft. 4¾-in. water string 7,200 ft. Seventh and eighth Callender zones carried no oil. Los Angeles County.

Hiles Drlg. Corp. 1 Grant 29-3s-13w
Flowed 1,250 bbl. 31.9°-gravity, 1 per cent cut, 1,550,000 cu. ft. gas, 1-in. bean. Pressures 100/250 lb. Elev. 45 ft. T.D. 7,259 ft. 6⅝-in. water string 7,200 ft. 1,360 ft. 4¾-in. liner 7,258 ft. Perf. 7,222-58 ft. 7,210 ft. 2½-in. tubing. Completed in seventh Callender zone. Well originally drilled by Gus Pongratz to 7,660 ft. with seventh zone untested. Los Angeles County.

Huntington Beach Field

Southwest Dev. Co. 37 State 4-6s-11w
Pumped 155 bbl. 27.2 gravity, 1 per cent cut. Elev. 49 ft. T.D. 4,801 ft. 8⅝-in. water string 4,023 ft. 795 ft. 6⅝-in. liner 4,800 ft. Perf. 4,021-4,800 ft. 4,401 ft. 2½-in. tubing. Completed in Huntington tideland by directional drilling. Drilling time, 26 days. Orange County.

Long Beach Field

Richfield 4 Bixby 13-4s-13w
Pumped 72 bbl. 22.2 gravity, 35 per cent cut. Elev. 60 ft. T.D. 5,520 ft. 8⅝-in. water string 4,120 ft. 1,530 ft. 5¾-in. liner 5,520 ft. Gun perf. 5,285-5,340 ft., 5,354-5,430 ft., 5,184 ft. 2½-in. tubing. Recompleted after being deepened from 4,225 ft. Los Angeles County.

Shell 46 Alamitos 29-4s-12w
Pumped 183 bbl. 25.9 gravity, 0.4 per cent cut. Elev. 180 ft. T.D. 3,840 ft. 5½-in. combination string 3,837 ft. Perf. 3,556-90 ft., 3,660-3,700 ft. 3,530 ft. 2½-in. tubing. Completed in Alamitos zone of Pliocene age. This well is located on discovery lease in field. Drilling time, 15 days. Los Angeles County.

Monterey Park District

United Pet. Co. 1 Haig 26-1s-12w
Dry. Elev. 130 ft. T.D. 3,707 ft. Took side-wall samples before suspending. Los Angeles County.

Palos Verdes District

Rolling Hills Pet. Co. 1 Weston 27-4s-14w
Dry. Elev. 158 ft. T.D. 6,550 ft. 4¾-in. water string 6,470 ft. Logged oil showings but attempts to complete well failed. Los Angeles County.

Torrance Field

Silver Circle Oil Co. 1 Torrance 18-4s-14w
Dry. Elev. 20 ft. T.D. 3,443 ft. Los Angeles County.

Wilmington Field

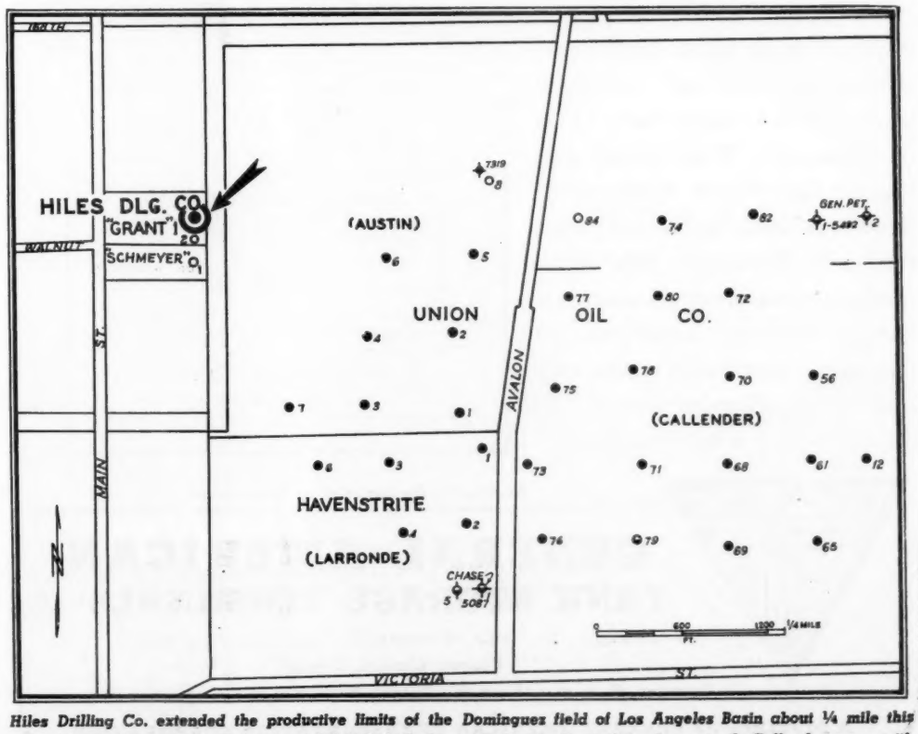
Royalty Service Corp. 1 Comm. 5-5s-13w
Pumped 448 bbl. 15.3 gravity, 5 per cent cut. Elev. 20 ft. T.D. 3,595 ft. 13⅜-in. water string 2,542 ft. 1,080 ft. 6⅝-in. gravel-packed liner 3,593 ft. Perf. 2,545-2,670 ft., 2,830-2,970 ft., 3,225-3,375 ft., 3,430-3,593 ft. 3,591 ft. 2½-in. tubing. Recompleted in Ranger zone after hole redrilled to original depth and gravel-packed. Los Angeles County.

Union Pacific R. R. 178 fee 4-5s-13w
Flowed 279 bbl. 20.5 gravity, 5 per cent cut. Elev. 15 ft. T.D. 3,515 ft. 10¾-in. water string 2,737 ft. 800 ft. 4¾-in. gravel-packed liner 3,509 ft. Perf. 2,728-96 ft., 2,811-46 ft., 2,866-2,934 ft., 3,209-3,316 ft. 2,944 ft. 2½-in. tubing with 233 ft. 2-in. on bottom with lead-seal packer. Comoleted in Ranger zone. Drilling time, 23 days. Los Angeles County.

LOS ANGELES BASIN OUTPOSTS

Dominguez Field

Union 79 Callender 32-3s-13w
T.D. 12,720 ft. in basement schist. P.B. 7,490 ft. Cut-



Hiles Drilling Co. extended the productive limits of the Dominguez field of Los Angeles Basin about ¼ mile this week by completing 1 Grant flowing 1,500 bbl. daily from 39 ft. of oil sand in the seventh Callender zone with bottom of the hole at 7,259 ft.

The eyes of east Texas are upon us!

Newest of General American's strategically located rail-water terminals is Galena Park (Port of Houston). With direct pipe line to East Texas fields, spurs from Southern Pacific and Houston Belt Railways, this ultra-modern plant gives all seven exclusive General American advantages—eliminates waste, contamination, shipping delays. Get the facts—see what you *save*.

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Corpus Christi, Texas
Carteret, N. J. (Port of New York) Galena Park, Texas (Port of Houston)

A DIVISION OF GENERAL AMERICAN TRANSPORTATION CORPORATION

ting and washing over 5½-in. casing 7,654 ft. Elev. 82 ft. Los Angeles County.

Inglewood Field

Standard 3-1 L.A.I. 17-2s-14w
Drilling sand and shale 10,310 ft. Formation Miocene age. Los Angeles County.

R. R. Bush Oil Co. 1 Merchants 8-2s-14w
Restrictions prevent drilling. Los Angeles County.

Jefferson Oil Co. 1 Smith 8-2s-14w
Drilling 3,184 ft. in sand. 12¾-in. surface pipe cemented 773 ft. Los Angeles County.

Texas 7 Smith 8-2s-14w
Rigging up. Los Angeles County.

Rosecrans Field

Southern Calif. Pet. Corp. 1 Townsite 12-3s-14w
T.D. 8,374 ft., P.B. 8,117 ft. 5½-in. casing cemented 8,117 ft. and gun perf. 7,964-8,117 ft. Making pumping test. Production 50 bbl. 32 gravity, cleaning up. T. P. Pike Drilling Co., contractor. Los Angeles County.

LOS ANGELES BASIN WILDCATS

East Santa Fe Springs District

Sierra Pet. Co. 1 Cole 2-3s-11w
Grading and hauling in material. Los Angeles County.

Orange District

Associated 1 Olive-Orange 19-4s-9w
Drilling 3,598 ft. in sand and gravel. Elev. 175 ft. Orange County.

Santa Ana Canyon District

Valley Pet. Co. 1 Kraemer 36-3s-9w
Drilling 2,191 ft. in sand and shale. Elev. 600 ft. Orange County.

AVERAGE DAILY PRODUCTION

LEADING CALIFORNIA FIELDS

	Barrels daily	
	Apr. 19	Apr. 12
Wilmington	83,750	83,300
Midway-Sunset	46,825	53,710
Long Beach	42,425	42,345
Kettleman North Dome	38,400	38,850
Coalinga	36,795	38,575
Ventura Avenue	33,550	34,125
Huntington Beach	28,560	29,075
Santa Fe Springs	23,850	23,725
Dominguez	21,375	21,875
Santa Maria Valley	18,250	18,515
Total	373,780	384,095

SAN JOAQUIN VALLEY

Although no official reports are being released on Standard Oil Co. operations in the Elk Hills field of Kern County, it is reported that the company's 44-29 fee in 29-30s-24e pumped about 750 bbl. per day from shallow zone at 3,230 ft. This zone is in Pliocene and completion of the well as a good pumper extends the productive limits of the field. Standard is drilling two other wells in 19-30s-24e and another in 31-30s-24e. A rig has been erected in 33-30s-24e but rotary drilling equipment is not yet on the ground. No. 42-31-S fee in 31-30s-24e recently passed 7,900 ft. and present plans call for a deep test which may extend to 10,000 ft. This field is untested in deeper zones although out on the east flank of the Elk Hills structure, Standard drilled a test to 8,404 ft. without finding production. It has not been determined whether this well tested the Miocene but if it did it was only for a few hundred feet at the most. South of the Elk Hills structure, Standard drilled 1 Packard in 16-31s-25e to a depth of 6,240 ft., stopping in Pliocene.

CANAL-STRAND.—For the first time since discovery there is no drilling under way in Canal field of Kern County. If Ohio Oil Co. and Shell Oil, Inc., decide to deviate from the 1 to 20-acre spacing and undertake to drill 1 well to 10 acres it will lead to additional drilling. Shell has been pioneering slim-hole drilling through the use of 4½-in. tubing at Ten Section and the success of this plan may result in the starting of similar work in the Canal field. Less than 1 mile separates the two districts. Stevens zone production has been developed in both districts. Operators may explore the Rio Bravo and Vedder zones with deeper drilling. Tide Water Associated Oil Co. has been successful in deepening Strand field wells in Kern County where the company recently found the second Stevens productive in a deep test which was plugged back and completed in this zone. Since that time the company has successfully deepened several wells originally finished in the upper Stevens. The Strand field was discovered by Tide Water Associated on acreage originally held by Continental Oil Co. and in which the latter retains an interest. Tide Water recently found the Vedder barren.

SAN JOAQUIN VALLEY COMPLETIONS

Coalinga Northeast Field

Wilshire-Annex Oil Co. 54-30-B 30-19s-16e
Flowed 2,000 bbl. 26.5 gravity, 1.1 per cent cut, 450,000 cu. ft. gas. 35/64-in. bean. Pressures 525/975 lb. Elev. 663 ft. T.D. 8,214 ft. 7-in. water string 8,165 ft. 41 ft. 5½-in. liner 8,214 ft. 100-mesh perf. 8,179-8,214 ft. 8,149 ft. 2½-in. tubing with bottom 15 ft. perf. Completed in Gatchell sand of Eocene age 8,189-8,214 ft. Kreyenhagen 6,824 ft., green sand 8,020 ft. Drilling time, 68 days. Fresno County.

Bandini Pet. Co. 56-30-B.....30-19s-16e
Flowed 2,000 bbl. 25.7 gravity, 2 per cent cut, 500,000 cu. ft. gas. 32/64-in. bean. Pressures 575/1,000 lb. Elev. 660 ft. T.D. 8,224 ft. 7-in. water string 8,186 ft. 48 ft. 5½-in. liner 8,224 ft. 100-mesh perf. 8,192-8,224 ft. 8,174 ft. 2½-in. tubing. Completed in Gatchell, 8,196-8,224 ft. Kreyenhagen 6,851 ft., green sand 8,056 ft. Bottomed in oil sand. Drilling time, 74 days. Fresno County.

Coalinga Southeast Field

Lytle, R. S., 57-7-F.....7-20s-16e
Flowed 2,200 bbl. 32.1 gravity, 1 per cent cut, 25/64-in. bean. Pressures 1,075/1,325 lb. Elev. 825 ft. T.D. 7,766 ft. 8⅝-in. water string 7,172 ft. 632 ft. 6⅝-in. liner 7,760 ft. Perf. 7,172-7,502 ft., 7,540-7,760 ft., 7,719 ft. 2½-in. tubing. Completed in Gatchell, Kreyenhagen 6,091 ft., green sand 7,156 ft. Drilling time, 34 days. Fresno County.

Texas 6 Exeter fee.....6-20s-16e
Flowed 741 bbl. 27.2 gravity, 0.2 per cent cut, 488,000 cu. ft. gas. 17/64-in. bean. Pressures 1,000/1,250 lb. T.D. 8,198 ft. 5½-in. water string 8,035 ft. 169 ft. 4½-in. liner 8,189 ft. Perf. 8,040-8,189 ft. 8,135 ft. 2½-in. tubing. Completed in Gatchell, Kreyenhagen 6,820 ft., green sand 7,980 ft. Bottomed in Gatchell. Drilling time, 54 days. Fresno County.

Coles Levee Field

Standard 20-8 Kern County Land.....5-31s-25e
Flowed 35 bbl. 36.4 gravity, 25 per cent cut, 791,000 cu. ft. gas. 54/64-in. bean. Pressures 65/440 lb. Elev. 430 ft. T.D. 9,660 ft., P.B. 9,480 ft. 8⅝-in. water string 8,880 ft. 615 ft. 4¾-in. liner 9,450 ft. Perf. 8,870-9,450 ft. 9,443 ft. 3-in. and 2¼-in. tubing. Completed in Stevens oil sand of Miocene age 8,890-9,480 ft. Bottomed in gray sand 9,492-9,660 ft. but plugged back to base of oil zone. N point 8,554 ft. Drilling time, 144 days. Kern County.

Elk Hills Field

Standard 44-29-S fee.....29-30s-24e
Pumped 750 bbl. 18.4 gravity, 1 per cent cut. Elev. 866 ft. T.D. 3,900 ft., P.B. 3,230 ft. 6⅝-in. water string cemented 3,185 ft. Production is estimated as no official data are released. Completion extends field eastward of Hay area. Kern County.

Fruitvale Field

Western Gulf 29-B Kern County Land.....14-29s-27e
Pumped 167 bbl. 19.8 gravity, 1.2 per cent cut. Elev. 405 ft. T.D. 3,205 ft. 8⅝-in. water string 2,993 ft. 287 ft. blank 6⅝-in. liner 3,164 ft. 99 ft. perf. liner 3,203 ft. Perf. 3,159-3,203 ft. 2,980 ft. 2½-in. tubing. Deepened from 3,033 ft. and completed in lower Chanac. Kern County.

Kettleman North Dome Field

Kenda 341-18-Q.....18-22s-18e
Flowed 235 bbl. 48.6 gravity, 0.5 per cent cut, 10,147,000 cu. ft. gas. 50/64-in. bean. Pressures 3,400/3,650 lb. Elev. 1,005 ft. T.D. 10,015 ft. 6⅝-in. water string 9,659 ft. 380 ft. 4¾-in. liner 10,010 ft. Perf. 9,676-10,010 ft. 9,546 ft. 2⅞-in. tubing. Completed in Avenal zone of Eocene age. Drilling time, 202 days. Kings County.

Mount Poso Field

Shell 24 Security.....16-27s-28e
Pumped 303 bbl. 15.1 gravity, 4.4 per cent cut. Elev. 1,340 ft. T.D. 2,005 ft. 8⅝-in. water string 1,906 ft. 108 ft. 6⅝-in. liner landed 2,005 ft. Perf. 1,930-2,005 ft. 1,701 ft. 3-in. tubing. Completed in Vedder zone 1,932-2,005 ft. Drilling time, 17 days. Kern County.

Shell 25 Security.....16-27s-28e
Pumped 185 bbl. 15.7 gravity, 5 per cent cut. Elev. 1,346 ft. T.D. 2,085 ft. 8⅝-in. water string 1,990 ft. 115 ft. 6⅝-in. liner 2,085 ft. Perf. 2,010-85 ft. 1,930 ft. 2½-in. tubing. Completed in Vedder zone 2,012-85 ft. Drilling time, 10 days. Kern County.

Ten Section Field

Shell 25-29-A Kern County Land.....29-30s-26e
Flowed 2,171 bbl. 34.6 gravity, 1.6 per cent cut, 3,050,000 cu. ft. gas. 128/64-in. bean. Pressures 125/900 lb. Elev. 329 ft. T.D. 8,389 ft. 5½-in. combination string 8,385 ft. 100-mesh perf. 8,060-8,385 ft. 7,950 ft. 2½-in. tubing. Completed in Stevens oil sand of Miocene age 7,770-8,389 ft. N point 7,452 ft. Drilling time, 27 days. Kern County.

Tupman Field

Richfield 36-32-A Kern County Land.....32-30s-25e
Flowed 1,100 bbl. 37.2 gravity, 1 per cent cut, 1,000,000 cu. ft. gas. Two 1½-in. beans. Pressures 150/900 lb. Elev. 309 ft. T.D. 9,098 ft., P.B. 8,770 ft. 8⅝-in. water string 8,500 ft. 300 ft. 6⅝-in. liner 8,768 ft. Perf. 8,513-96 ft., 8,661-8,758 ft., 8,720 ft. 2½-in. tubing. Completed in Stevens oil sand of Miocene age 8,531-8,770 ft. N point 8,133 ft. Bottomed in gray sand 8,985-9,078 ft. but plugged back to base of Stevens oil sand. Drilling time, 74 days. Kern County.

SAN JOAQUIN VALLEY OUTPOSTS

Elk Hills Field

Standard 42-31-S fee.....31-30s-24e
Drilling and coring in sand and shale 7,852 ft. Elev. 1,122 ft. Kern County.

Standard 45-19-S fee.....19-30s-24e
Drilling ahead at 1,340 ft. in sand and shale. Elev. 707 ft. Kern County.

Standard 27-19-S fee.....19-30s-24e
Drilling in sand and shale 4,140 ft. Elev. 808 ft. Kern County.

Kettleman North Dome Field

Standard 1-1-U fee.....1-23s-16e
Drilling in hard tight gray sand 11,778 ft. Formation test of Eocene 10,860 ft. with packer 10,762 ft., light blow gas with water. Elev. 693 ft. Kings County.

Midway-Sunset Field

North American Oil Cons'd. 1-28 W.P.....28-32s-23e
Drilling 6,918 ft. in very hard shale with streaks of impervious sand. Elev. 1,560 ft. Kern County.

SAN JOAQUIN VALLEY WILDCATS

Cantua Creek District

Texas 27-13 Southern Pacific.....13-17s-15e
T.D. 9,673 ft., P.B. 9,380 ft. Formation test flowed 1,000 bbl. salt water, 500,000 cu. ft. gas. Ground elev. 340 ft. Fresno County.

Buena Vista Hills District

Honolulu 25-P fee.....10-32s-24e
Drilling 13,350 ft. in shale with streaks of hard sand. Objective is Rio Bravo and Vedder zones. Elev. 916 ft. Kern County.

Buttonwillow District

Texas 47-15 Southern Pacific.....15-29s-24e
T.D. 8,933 ft. in sand and shale. 8⅝-in. cemented 8,932 ft. with 2,000 sacks cement. Elev. 287 ft. Kern County.

Bellevue District

Ohio Oil Co. 1-G Kern County Land.....36-29s-26e
Drilling 3,964 ft. in sand and shale. Location 2,310 ft. S 1,640 ft. E from NW cor. Sec. 36-29s-26e. Kern County.

Union 31-3 Kern County Land.....3-30s-26e
Drilling 10,158 ft. in sand and shale. Stevens oil zone absent. Kern County.

Lafayette District

Lafayette Oil Co. 1 Morris.....28-1n-2w
Rigging up rotary drilling equipment. Preparing to spud. Located in Contra Costa County.

Lost Hills District

Associated 46-16 fee.....16-27s-21e
Road built. Location 1,650 ft. N, 2,310 ft. E from SW cor. Sec. 16-27s-21e. Kern County.

Raisin City District

Shell 8-18 Properties, Inc.....18-15s-18e
Rigging up, preparing to spud. Fresno County.

Maricopa District

Bankline Oil Co. 24-24 Sunset.....24-11n-23e
T.D. 3,132 ft., P.B. 2,035 ft. Redrilling 2,863 ft. Elev. 970 ft. Kern County.

Rio Vista District

Amerada 1 Wilcox.....31-4n-3e
T.D. 4,209 ft. in Cretaceous gas sand. Completed and shut in without test. Sacramento County.

Shafter District

Continental 2-G Kern County Land.....35-27s-24e
Drilling in sandy shale 11,349 ft. Redrilling 9,910 ft. Two fish in hole. Elev. 986 ft. Kern County.

Tejon District

Continental 1-A Tejon.....28-11n-19e
Drilling 629 ft. in surface sand. Elev. 874 ft. Kern County.

Kern Line Oil Co. 1 Tejon.....19-11n-19e
T.D. 8,390 ft. Rebuilt rig and rigging up. Elev. 970 ft. Kern County.

Vernalis District

Standard 2 Blewett Comm.....25-3s-6e
Drilling 3,496 ft. in sand and shale. Elev. 62 ft. Drilling to gas zone in Cretaceous. San Joaquin County.

COASTAL DISTRICT

Standard Oil Co. has started a second well on the Los Flores Land & Water Co. property in the Los Flores district of Santa Barbara County and it is

NAYLOR PIPE..A Natural for Natural Gas Lines!
Naylor Pipe gives ALL-OUT performance on gas-gathering lines. No other light-weight pipe can match its structural advantages in vacuum service. The strength and safety of its Lockseam Spiralweld make it a natural for handling tough jobs usually requiring heavier-wall pipe—and you save the difference in cost. Sizes: 4" to 30" in diameter. Write for catalog today.
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quite likely therefore that Union Oil Co. may also begin drilling a new well on offset acreage. Standard's new drilling on the Los Flores Land property in the southern end of the Cat Canyon district is the result of an agreement entered into several months ago calling for three wells this year. Los Flores Land & Water Co. is owned 50 per cent by Universal Consolidated Oil Co. and this operator desires to participate in increased revenues that should accrue from development of the large acreage involved. Union Oil Co. drilled an offset to Standard's initial well and found the pay several hundred feet higher than Standard, thus indicating an unconformity. It is still not known whether this is a new accumulation or merely a continuation of the Cat Canyon district. Union Oil Co. holds several thousand acres under lease and in fee simple in this region.

VENTURA COUNTY.—Chanslor-Canfield Midway Oil Co. is engaged in a successful development program in the Rincon field of Ventura County and has completed a number of good wells. The company is now drilling a deep test to determine lower-zone possibilities. Several relative deep tests have been drilled nearer the tideland but no outstanding success was attained. The deep test, which recently passed 7,750 ft., is 9-C Hobson in 17-3n-24w.

OAK CANYON.—In Oak Canyon district, discovered a few months ago by Western Gulf 1 Lechler, which pumped 90 bbl. daily, Hathaway Co. is making a production test at 2,592 ft. in 1 Ram, a semiwildcat.

COASTAL DISTRICT COMPLETIONS

Rincon Field

C. C. M. O. Co. 44-B Hobson 16-3n-24w
Flowed 350 bbl. 30.1 gravity, 5 per cent cut, 32/64-in. bean. Pressures 95/100 lb. Elev. 692 ft. T.D. 4,850 ft. 7-in. water string 4,750 ft. 330 ft. 4¾-in. liner 4,697 ft. 4,362 ft. 2½-in. tubing. 7-in. casing perf. 4,390-4,600 ft., liner perf. 4,367-4,567 ft. Completed in Hobson zone. Drilling time, 35 days. Ventura County.

Ventura Avenue Field

Associated 26 Hartman 22-3n-23w
Flowed on compressor 362 bbl. 27.2 gravity, 3 per cent cut, 385,000 cu. ft. gas, 56/64-in. bean. Pressures 100/500 lb. Elev. 378 ft. T.D. 9,900 ft. 7-in water string 9,090 ft. 830 ft. 5½-in. liner 9,897 ft. 7,890 ft. 2½-in. tubing. Completed in 57 zone. Drilling time, 165 days. Ventura County.

Ventura County District

Renard Oil Co. 1 Bardsdale 6-4n-19w
Abandoned. Elev. 105 ft. T.D. 1,110 ft. No oil sand found in well. Ventura County.
Westoil Corp. 1 Bardsdale 6-3n-19w
Abandoned. Elev. 185 ft. T.D. 355 ft. Started and stopped in Sespe. No important showings logged. Ventura County.

COASTAL DISTRICT WILDCATS

Castaic District

Barnsdall 1-17-A Honor Rancho 5-4n-16w
Drilling 2,798 ft. in sand and shale. Showing gas. Los Angeles County.
Morse-Mangold 1 McDermott 26-5n-17w
Drilling 998 ft. in sandy shale. Los Angeles County.

Del Valle District

Jasper, Fred, 1 Videgain 17-4n-17w
Drilling 417 ft. in sand and shale. Los Angeles County.
Havenstrite, R. E., 1 Vasquez 21-4n-17w
Drilling sandy shale 7,102 ft. First and second Miocene zones wet. Located SE of discovery well. Elev. 1,102 ft. Los Angeles County.
Universal Consolidated Oil Co. 1 Dennis 21-4n-17w
Rigged up. Elev. 1,006 ft. Los Angeles County.

Goleta District

Texas 3-A Bishop 13-4n-29w
Location staked. Santa Barbara County.
Del Mar Oil Co. 1 Goleta 11-4n-28w
Rigged up. Santa Barbara County.

Loma Grande District

Loma Grande Oil Co. 1 Corey 23-24s-10e
Drilling 3,070 ft. in shale. Elev. 1,500 ft. Monterey County.

Los Flores District

Standard 2 Los Flores 27-9n-33w
Grading road and hauling in material. Santa Barbara County.

Newhall District

Aztec Oil Co. 1 Sanborn 6-3n-16w
Drilling 1,273 ft. in sand. Elev. 1,516 ft. Los Angeles County.
Purman, H. T., 1 Needham 13-3n-16w
Graded road and location. Expect production around 1,550 ft. Elev. 1,661 ft. Los Angeles County.
Texas 7 Whitnah 14-3n-16w
Building roads. Located on major Pico anticline. Los Angeles County.

Oak Canyon District

Western Gulf 2 Lechler 31-5n-17w
Drilling 1,184 ft. in sand and shale. Contemplate deep test to lower Modelo. Elev. 1,489 ft. Los Angeles County.
Hathaway Co. 1 Ram 31-4n-17w
Drilling 2,592 ft. in sand and shale. 8⅝-in. cemented 2,410 ft. Making pumping test. Elev. 1,369 ft. Los Angeles County.

Save wear+tear on clutches...
Commenting on the advantages of Twin Disc Torque Converters for both rotary and cable tool rigs, one engineer says:
"Have Twin Disc Torque Converters on 8 rigs. First has been out more than a year. Use them on both rotary and cable tool rigs. They pick up heavier loads . . . do the same work with smaller engines . . . get steam performance . . . eliminate shocks which save wear and tear on clutches."
In addition, he might have mentioned that a Twin Disc Torque Converter makes it impossible to stall the engine . . . gives you an unlimited automatic gear selection with only one control . . . the engine throttle. Complete data from your nearest Twin Disc representative or write direct to Hydraulic Division, Twin Disc Clutch Company, 1328 Racine Street, Racine, Wisconsin.
The Twin Disc Hydraulic Torque Converter illustrated above gives an internal combustion engine steam engine performance.
TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES
REG. U. S. PAT. OFF.

Rocky Mountain Area

(Continued from Page 108)

High Gravity Oil 2 Horner .... CSL NE SW 18-35n-3w
Drilling 160 ft., first report.
Big West 5 Ellingson ..... CSL SE SW 14-35n-3w
Drilling 460 ft., first report.
R. G. Parrant 1 Holbrook ..... C NW NE 2-36n-3w
T.D. 2,065 ft., contact 2,062 ft., good show oil, will run 3-in.
Ohio 7 Howling ..... NE NE SE 10-35n-2w
Running 6¼-in. at 1,565 ft., show oil in Sunburst at 1,394-1,418 ft.
Dunkirk Adventure 1 McKechnie NW SW SE 2-31n-1w
Drilling 730 ft.

Valley County

Montana-Dakota No. 645 ..... C NE NE 15-31n-34e
Drilling 678 ft. in Colorado shale, first report, Bowdoin field.
Montana-Dakota No. 646 ..... C NE NE 23-31n-34e
Drilling 103 ft., first report.

NORTHWEST NEW MEXICO

Bernalillo County

David H. Boyd 1 Wright 11-10n-5e
Drilling 187 ft.

Sandoval County

Sieman & Boyd 1 Armijo ..... SE SW 1-12n-3w
T.D. 715 ft., show oil in sand topped at 711 ft., set 6¼-in., testing.

San Miguel County

Southwest Drilling, Inc., 1 Conchas NW NE 34-17n-21e
T.D. 2,675 ft. Contract to Elmer J. Fisher to move in rotary and complete.

San Juan County

Carroll & Carroll 2 Government C NW NW 12-29n-12w
Drilling 1,610 ft.
Red Cactus Oil 1 Tribal ..... SE SE SE 35-29n-18w
T.D. 1,540 ft., top first Dakota 1,515 ft., water, will run 5⅛-in. and go to second sand.

Torrance County

Cardinal Oil Co. 1 State ..... SE SW 3-8n-14e
S.D. 100 ft., for casing.
Orville J. Lee 1 Milburn ..... C NW SW 36-7n-7e
Drilling 590 ft.
J. P. Stewart 1 Laman ..... C NW NE 3-3n-12e
T.D. 776 ft., skidded rig, drilling 100 ft. in new hole.

UTAH

Summit County

Longwell Petroleum Co. 1 ..... SE SW SE 35-3n-5e
Drilling 3,691 ft.

Flank Test on Pine Prairie Dome Shows Oil in Sparta

By F. L. SINGLETON

NEW ORLEANS, La., Apr. 21.—Main interest in the Louisiana Gulf Coast district was centered on the old Pine Prairie salt dome, Evangeline Parish, where casing was cemented in a wildcat test following the logging of possible oil sand.

The well is C. & I. Production Co. 1 Evangeline Land & Mineral Co., on the east flank in Section 37-3s-1w. Seven-inch casing was cemented on bottom at 8,239 ft., after 1½ ft. of burnt sand with an oil odor was recovered in a core at 8,232-37 ft. An electrical log showed 17 ohms resistivity on normal curve from 8,210-36 ft. The Vicksburg was topped at 7,060 ft., Moody Branch at 7,842 ft., Cockfield at 7,906 ft., and the sand section is believed to be the Sparta, the upper member of the Wilcox zone. This is a projected 9,500-ft. test, and the hole may be drilled deeper before a production test is made.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Fields	14	4,196	117,042
Dry holes: Fields	4	.....	30,193
Gas wells: Fields	1	.....	7,050
Total	19	.....	154,295

Old Shallow Producer

Pine Prairie was discovered in 1912, when small production was developed from the Cap Rock and Miocene sand at intervals from 1,300-2,400 ft. Production was short-lived, and the field was later abandoned. Since the opening of Eocene production at Eola and Cheneyville, this area has been looked upon as a favorable prospect for deeper exploration, and during the past 2 years considerable geophysical work has been done. The present well is the deepest test ever drilled around the flanks of the structure.

AVOYELLES PARISH.—Two other Wilcox tests were being watched with interest. In Avoyelles Parish, Cockburn, Hargrove et al (C. C. Parks) 1 Snowden, in the Lake Latainer area, is reported to be ready for testing after casing was cemented at approximately 6,700 ft. Sand showed favorable indication on an electrical log. Location is in 22-3n-5e.

RAPIDES PARISH.—In Rapides Parish, near the town of Alexandria, Navarro Oil Co. 1 Cooper is drilling in shale below 3,400 ft. The Vicksburg was topped at 2,087 ft., Hockleyensis at 2,331 ft., Moody Branch at 2,701 ft., and the Cockfield at 2,750 ft.

Two Beauregard Locations

Development in the Neale field, Beauregard Parish, is being resumed as locations for two tests were announced by Atlantic Refining Co. The locations are 5 and 6 Musser-Davis. Both are offset locations in 26-9s-11w.

WESTWEGO.—Stanolind Oil & Gas Co. staked location in the newly opened Westwego field, Jefferson Parish, for 1 Victor A. Pitre, Section 5-13s-23e, which places the test northeast of the discovery well. Reese E. Carter 1 Craven, completed the previous week as a ¼-mile east extension to the field, has keen killed in an attempt to reduce the high gas-oil ratio. The well was originally completed through perforations at 8,993-98 ft., flowing at the rate of 125 bbl. of oil per day through a ¼-in. choke. Perforations have been cemented and the casing will be reperforated at a slightly lower level. The well has produced a total of 1,330 bbl. of oil.

ST. GABRIEL FIELD.—A slight extension was recorded for the St. Gabriel field, Iberville Parish, by George Echols 1-A Gueymard, completed through perforated casing at 7,772-84 ft., for an initial production of 211 bbl. per day flowing through a ⅛-in. choke. Tubing and casing pressures were 1,275 lb. Shell Oil Co., Inc., has started drilling operations on its first test, 1 Gueymard, a south offset to the discovery well.

CAMERON PARISH.—In the Pecan Lake area, south of the Grand Lake field, Cameron Parish, Superior Oil Co. of California 1-B Miami Corp., is scheduled to be drilled deeper from 10,555 ft., where 7-in. casing was cemented during the week. This well has shown considerable gas pressure. An electrical log is reported to have shown five gas-distillate sands at intervals from 10,136-10,528 ft. Location is in 29-14s-3w.

Avoca Island Location

Location for a projected deep wildcat was announced for St. Mary Parish by William Helis et al. The test is 1 Avoca Co., on the Avoca Island prospect.

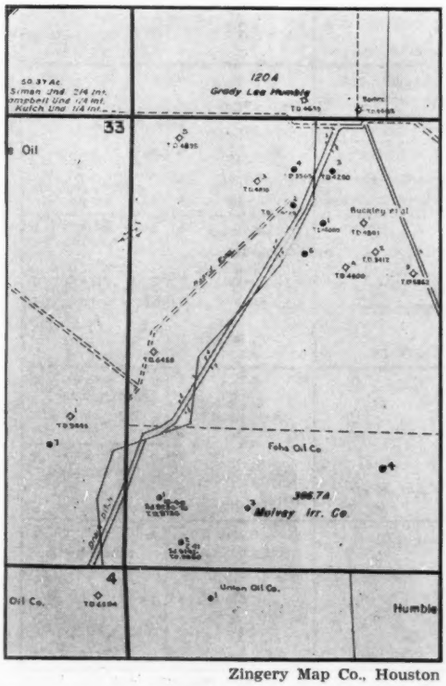
In the Bayou Sale area, Humble 1 Marin is drilling in shale below 9,402 ft., while on the Cote Blanche Island salt dome, Texas 1 State-Cote Blanche was abandoned in salt at 5,454 ft. Top of the salt was logged at 1,909 ft.

IOWA EXTENSION.—Although no gage was available, Stanolind 1 Gillson is reported to have extended the deep pay in the Iowa field, Jefferson Davis-Calcasieu parishes, several hundred feet north, as the well was showing for producer while cleaning out from perforated casing at 8,256-64 ft.

EDGERLY FIELD.—Gulf Refining Co.'s attempt to open deep-sand production on the southeast flank of the Edgerly field, Calcasieu Parish, has apparently failed and the well is reported to be temporarily abandoned. Casing was cemented the previous week at 8,502 ft., and the well was tested through perforated casing at 7,560-56 ft. Tubing and liner is being pulled. The hole may be used for geophysical purposes, after which a new test is expected to be drilled in the same area.

PLAQUEMINES PROSPECTS.—Texas 1 State-Octave Pass, a prospective pool-opener located in Plaquemines Parish, is bottomed at 11,494 ft., and 643 ft. of 5-in. casing was cemented there, preparatory to testing a sand and sandy-shale section which showed oil from 11,184-11,394 ft. Another prospective pool opener located in the same parish is 1 State-Delacroix Island, which is slated for testing following a series of cement-squeeze jobs. The hole is bottomed at 11,165 ft., and 7⅝-in. casing was cemented at 10,212 ft. While details of the core record are not available, several possible oil sands are reported to have been logged.

GUEYDAN EXTENDED.—A south extension of several hundred feet to the deep pay on the south flank of the Gueydan field, Vermilion Parish, was registered by completion of Union Sulphur Co. 1 Baker, which is flowing at the rate of 225 bbl. of oil per day through a ⅞-in. choke from sand at 9,750 ft. The company is moving the derrick about 500 ft. east for 2 Baker. With the establishment of deep sand on the south flank of the structure, Fohs Oil Co. is preparing to drill on the north flank, where location was made for 1 Grady Lee Humble in 27-11s-1w, a proposed 10,500-ft. test.



Zingery Map Co., Houston

Plat of the Gueydan field, Vermilion Parish, showing trend of development on south flank of structure as the result of deep-sand discovery

LOUISIANA GULF COAST COMPLETIONS

Acadia Parish

Bayou Mallet field: Superior 2 Smith, dry, T.D. 7,250 ft.
Jennings field: Port City Oil Co. 29 Jennings, 100 bbl. fluid, 90 per cent oil, 10 per cent salt water, T.D. 3,000 ft. P.B. T.D. 2,830 ft.

Calcasieu Parish

Gillis field: Fohs 14 O. H. Castle, gas well, perf. casing 6,902-10 ft., T.D. 7,050 ft.
Perkins field: Lisbon-Iberia 1 Edgewood & Logging Co., dry, T.D. 6,272 ft.

Cameron Meadows

East Hackberry field: Harrison & Abercrombie 2 Dorion, 791 bbl., ¼-in. choke, perf. casing 7,466-81 ft., T.D.

Evangeline Parish

Ville Platte field: Continental 2 Tate, 40 bbl., ⅞-in. choke, T.D. 10,191 ft., P.B. T.D. 9,000 ft.
Continental 1 Ed Tate, Unit 27, 22 bbl., ⅞-in. choke, perf. casing 8,962-72 ft., T.D. 10,378 ft.
Continental 1 Joe Tate, 63 bbl., ⅞-in. choke, perf. casing 9,100-20 ft., T.D. 10,207 ft.
Continental 1 W. L. Tate, dry, T.D. 10,191 ft.

Iberville Parish

Bayou Blue field: Navarro Oil Co. 5 Wilberts Mineral, 456 bbl., ¼-in. choke., perf. casing 2,044-70 ft., T.D. 2,300 ft.
Bayou Choctaw field: Louark Producing Co. 14 Wilberts, 179 bbl., ⅞-in. choke, T.D. 7,938 ft., P.B. 5,566 ft.
St. Gabriel field: George Echols 2-A Natalbany Lumber Co., 178 bbl., ¼-in. choke, perf. casing 7,780-88 ft., T.D. 7,830 ft.

Jefferson Parish

Lafitte field: Texas 18 Lafitte, 776 bbl., ¼-in. choke, perf. casing 9,400-65 ft., T.D. 10,160 ft.
Texas 14 Rigolet Cooperative Fur Co., 503 bbl., ¼-in. choke, T.D. 10,230 ft., P.B. 10,059 ft.

Jefferson Davis Parish

Woodlawn field: Union Sulphur 3 Trimble, 140 bbl., ⅛-in. choke, perf. casing 8,036-46 ft., T.D. 8,072 ft.

Plaquemines Parish

Grand Bay field: Gulf 7-A Grand Prairie, 602 bbl., ⅞-in. choke, T.D. 12,034 ft., P.B. T.D. 8,435 ft.

St. Mary Parish

Belle Isle field: Sun 1 Belle Isle Corp., 68 bbl., ¼-in. choke, perf. casing 9,830-70 ft., T.D. 11,117 ft.

Vermilion Parish

Abbeville field: E. L. Buckley 1 Boudoin, dry, 6,480 ft.

West Baton Rouge Parish

Port Allen field: Amerada 1 Wilbert Sons Lumber & Shingle Co., 288 bbl., 5/32-in. choke, perf. casing 9,610-20 ft., T.D. 10,044 ft.

LOUISIANA GULF COAST DRILLING REPORT

Calcasieu Parish

Gulf 1 Calcasieu National Bank, Hayes prospect, drilling shale 9,722 ft.

Iberia Parish

Gulf 1 Petit Anse Co., Avery Island dome, drilling shale in sidetracked hole 7,764 ft.

Terrebonne Parish

Barnsdall 1 State, Point au Fer prospect, drilling shale 3,450 ft.
Sinclair Prairie 1 Arragon Plantation, Bourg area, drilling shale 9,800 ft.

Vermilion Parish

Erath field: Phillips 1 Dugas, drilling shale 11,216 ft.
Texas 1 Broussard, drilling shale 11,622 ft.
Cities Service 1 Homeseekers Development Co., NE of Gueydan field, drilling shale 3,315 ft.

Texas Gulf Coast

(Continued from Page 110)

Stanolind 1 L. D. Vieman, west of Chenango field, drilling shale 9,457 ft.

Harris County

Pure 1 Chase National Bank, southeast of Hoffman, drilling shale 4,356 ft.

Matagorda County

Pan American 1 Hudson, southeast flank Markham, drilling shale 1,487 ft.

Wharton County

W. R. Davis 1 Hartman, Lake View area, drilling shale 5,510 ft.
S. W. Richardson 1 Jones, P. Middleton Sur., drilling 1,528 ft.

By
ROBERT INGRAM

Extensions Made to Zenith, Lost Springs and Penokee

STAFFORD County, which has consistently grown in production and producing areas in the last 12 months, had another important development this week. The Zenith pool, discovered in September 1937, was extended ¾ mile west by J. E. Crosbie 1 Buckles, N½ NE NE 16-24-11w, which swabbed 10 bbl. an hour on a 6-hour test from the Viola lime. The producing formation was topped at 3,809 ft. and penetrated 24 ft. to go through the Fernvale limestone porous member.

Much new development was assured in the area because of offset requirements and because of the relatively high structural position of the Buckles well. It is along the stratigraphic shore line of the west side of the pool.

One of the state's older producing areas, the Lost Springs pool of Marion County, was also extended after 2 months of suddenly increased drilling. Twelve rigs have been active at Lost Springs since the first of the year, and as many good wells have been completed. Production is from the Mississippian chat at about 2,365 ft. in the major part of the pool and was found in the same formation at Ring-Mac Oil Co. 4 Schick, W½ SE NW 33-17-4e, at 2,434 ft. The 4 Schick was completed for an initial potential of 153 bbl. of oil a day and extends production ½ mile southward.

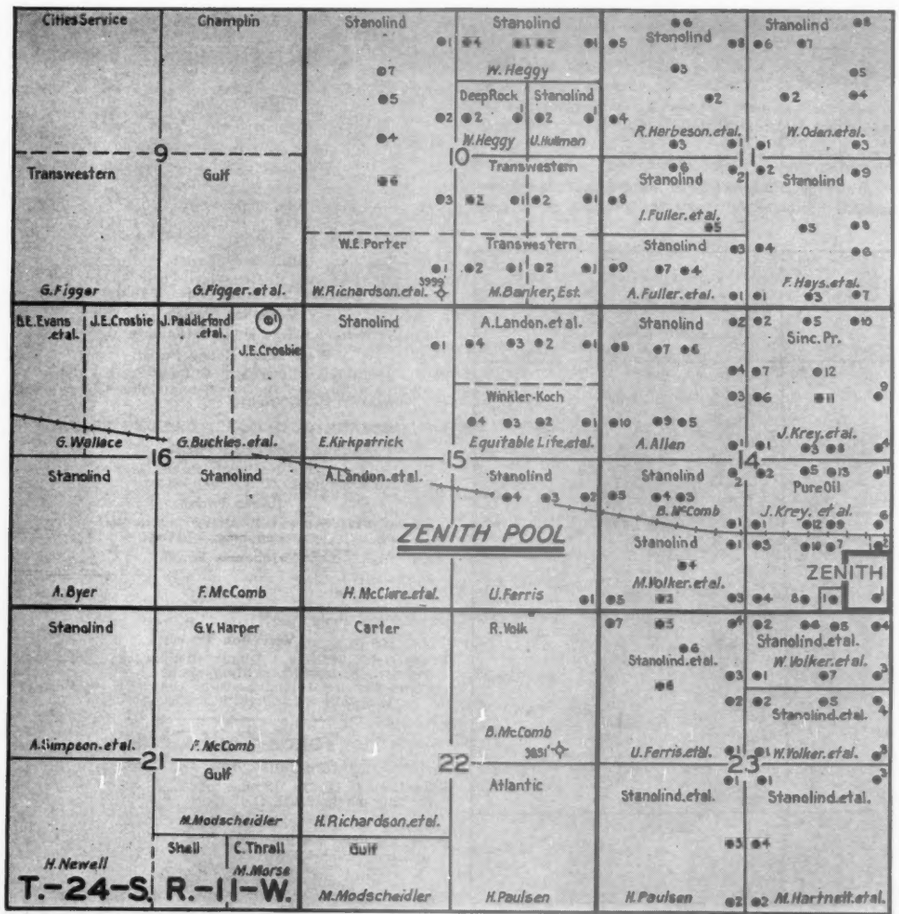
Meantime, the new Penokee pool of Graham County had its second producer in Cetal Drilling Co. 1 Lyon, SW SW 1-8-24w, which was testing after it found saturation in the Lansing-Kansas City lime series. The well, 5 miles west of Hill City, topped the Lansing at 3,206 ft. and drilled saturation from 3,793-98 ft. It was drilled to 3,835 ft., total depth, and 5½-in. casing was set for a production test. The 1 Lyon, a diagonal southwest offset to the R. W. Shields 1 Paxon, discovery well, compared 10 ft. structurally lower on the top of the Lansing than the pool opener which was completed early in the year.

Another extension last week was at the Davidson pool, pioneer producing area of Barton County, which had production ⅝ mile further northeast in the Lansing-Kansas City lime after Harvey H. Blair et al 1 Peirano, N½ NE NE 4-16-11w, filled up and began flowing after operators drilled the cement plug. The Lansing was topped at 2,930 ft. and drilled to 3,020 ft., total depth.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Fields	34	33,608	104,632
Gas wells: Fields	1	*8.6	3,323
Dry holes: Fields	8	.....	23,812
Wildcats	2	.....	5,056
Total	45	.....	136,823
Nebraska			
	No.	Bbl.	Footage
Oil wells: Fields	1	187	2,521
Dry holes: Fields	1	.....	2,303
Wildcats	1	.....	2,550
Total	3	.....	7,374
Missouri			
Dry holes	1	.....	2,311

*Million cu. ft.



Midcontinent Map Co., Tulsa

Stafford County's Zenith pool, one of the most consistently active areas of the state in recent months, was extended westward along a stratigraphic shore line this week to open a sizeable area for new drilling. The new well, J. E. Crosbie 1 Buckles, is circled above in NE NE 15-24-11w

Natural-Gas Tax Reinstated

Gas producers last week were informed by the state Corporation Commission that the assessment on natural-gas production in Kansas would be reinstated May 1 because of a shortage of funds available for administration of gas conservation. The assessment of ½ mill on each 1,000 cu. ft. of gas produced was suspended in July 1940. In reinstating the levy the commission said "the monies available to defray the costs and expenses of administering the natural-gas act have gradually been reduced until they will not be adequate to defray future expenditures unless they are supplemented by new receipts."

The reinstatement of the tax was expected to have virtually no effect on operations in the state, but Kansas restrictions on gas production have led to increased drilling in Texas County, Oklahoma sector of the great Hugoton field at the expense of the Kansas sector. Development at Hugoton, however, has been relatively slow anyway because of a limited market, and until and unless important new pipe lines are run to major consuming areas, no unusual spurt in drilling is expected.

AVERAGE DAILY PRODUCTION

LEADING KANSAS FIELDS

	Apr. 19	Apr. 12
Augusta	1,200	1,200
Bemis-Shutts	10,150	10,750
Bloomer	5,300	5,850
Burnett	7,200	7,300
Burrton	7,600	7,450
Chase	5,850	4,750
Elbing	1,050	1,100
El Dorado-Towanda	7,000	7,050
Geneseo	5,800	4,200
Graber	2,450	2,500
Greenwood County	8,750	8,700
Hollow-Nikkel	1,450	1,400
Keesling	700	750
Lerado	700	650
Lorraine	750	700
Oxford	700	700
Rainbow Bend	950	900
Raymond	1,050	1,600
Ritz-Canton	3,750	3,750
Trapp	18,300	13,750
Balance Russell County	20,150	21,150
Sedgwick County	3,300	3,250
Voshell	1,850	1,800
Silica	17,200	15,500
Wellington	1,150	1,150
Wherry	3,000	2,650
Zenith	7,300	7,250
Others	73,850	69,150
Total	218,500	208,950

WILDCATS PLUGGED

18-18-1w, W½ NW SE. Westgate-Greenland 1-A Chindberg T.D. 2,870 ft., Mississippi lime 2,841 ft., dry.

26-28-6, NE SE NW ..... Rex & Morris 2 Matthews T.D. 2,885 ft., Kansas City lime 2,215 ft., dry.

FIELD DRILLING COMPLETED

Beaumont, Greenwood County: Moulter 2 Ledgerwood, NW NW SW 36-27-8, 10 bbl., Arbuckle 2,753-55 ft., T.D. 2,762 ft.

Bemis, Ellis County: Cities Service 8 McCord, SE NW SE 26-11-17w, 3,000 bbl., Arbuckle 3,555-61 ft.

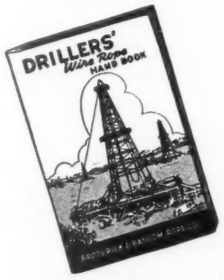
Bemis, South, Ellis County: Cities Service 1 Hall, SW SW 2-12-17w, dry, T.D. 3,780 ft., Lansing 3,390 ft., Sooy 3,615 ft., Arbuckle 3,736 ft.

Bemis, West, Ellis County: Champlin 8 Hadley, N½ NW SW 17-11-17w, 3,000 bbl., Arbuckle 3,370-85 ft., T.D. 3,420 ft.

Burnett, Ellis County: Darby 8 Hadley, S½ SW NW 13-11-18w, 3,000 bbl., Arbuckle 3,340-49 ft. Dickey 6 Stein, W½ NE SE 7-11-17w, 3,000 bbl., Arbuckle 3,401-08 ft.

Coralena, Russell County: Irwin 1 Rein, SE NE NE 8-15-13w, pumped 60 bbl., Sooy 3,313-15 ft., T.D. 3,330 ft.

Edwards, Ellsworth County: Continental 4 Janzen, C



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Continental 7 Ploog, N½ N½ SW 27-17-8w, pumped 3,000 bbl., Arbuckle 3,215-24 ft.
Continental 9 Rolfs, NE SW NE 28-17-8w, pumped 395 bbl., Arbuckle 3,200-29 ft.
Emmeram, Ellis County: Bridgeport 2 Froelich, N½ NW SE 4-13-16w, pumped 914 bbl., Lansing 3,240-49 ft.
Frog Hollow, Cowley County: Brewer 1 Miller, SE NW SW 16-32-5, pumped 173 bbl., Bartlesville 3,048-74 ft., T.D. 3,078 ft.
Geneseo, Rice County: Continental 7 Kimple, SE SW NW 25-18-8w, swabbed 260 bbl. in 4 hr., Arbuckle 3,182-3,219 ft.
Continental 8 Kimple, NE NW NW 25-18-8w, swabbed 60 bbl. in 3 hr., Arbuckle 3,222-31 ft.
Continental 3-A Warner, SE NW NW 36-18-8w, swabbed 260 bbl. in 4 hr., Arbuckle 3,193-3,227 ft.
Hall-Gurney, Russell County: Skelly 9 Rein, N½ NE SW 25-14-14w, pumped 362 bbl., Lansing 2,924-89 ft.
Stanolind 6 Rein, E½ E½ NW 25-14-14w, 3,000 bbl., Topeka 2,611-17 ft.
Continental 3 Rein, N½ SE NW 27-14-13w, pumped 1,359 bbl., Kansas City 2,882-2,915 ft.
Cities Service 5 Graham, S½ NE NW 28-14-13w, pumped 693 bbl., Lansing 2,902-21 ft. and 2,974-80 ft., T.D. 3,170 ft.
Coralena 8 Phinney, N½ SE NE 30-14-13w, pumped 104 bbl., Lansing 2,888-2,981 ft.
Skelly 4 Ehrlich, N½ SW SW 32-14-13w, pumped 53 bbl., Lansing 2,868-2,976 ft.
Helmerich & Payne 4 Holl, C NW 22-14-14w, pumped 414 bbl., Lansing 3,037-3,131 ft.
Darby 2 Strecker, W½ W½ NE 25-14-14w, pumped 445 bbl., Lansing 2,981-86 ft.
Hoagland, Woodson County: Aikman & Braden 2 Reed, SE NW SE 26-23-14, dry, T.D. 1,669 ft., Mississippi lime.
Karber, Rice County: Carlock 1 Karber, S½ SW SW 6-19-10w, dry, T.D. 3,404 ft., Lansing 3,027 ft., Sooy 3,328 ft., Arbuckle 3,391 ft.
Keesling, Rice County: Olson Oil 1 Cox, N½ SE NE 9-20-9w, pumped 162 bbl., Arbuckle 3,217-3,245 ft.
Krier, Barton County: Skelly 3 Esfeld, S½ NE NE 30-16-11w, pumped 90 bbl., La Motte sand 3,318-22 ft.
Kruckenberg, Barton County: Schermerhorn-Winton 1 Merten, E½ NE SW 11-19-15w, 8,600,000 cu. ft. gas, pays 3,319-25 ft. and 3,312-23 ft., Lansing.
Lost Springs, Marion County: Ring-Mac 3 Schick, NW SW NW 33-17-4, pumped 177 bbl., Mississippi lime 2,397-2,430 ft.
Raymond, Rice County: Benson 1 Specht, S½ SE NW 16-20-10w, dry, T.D. 3,396 ft.
Eastboro, Sedgwick County: Deep Rock 2 Morley, NW NE SW 30-27-2, dry, T.D. 3,287 ft., Misener 3,269 ft., Viola 3,274 ft.
Smock-Sluss Butler County: Bisagno 2-A fee, NE NE 35-26-5, pumped 25 bbl., Bartlesville 2,730-52 ft.
Silica, South, Barton County: Gulf 2 Mever, E½ SE SE 13-20-11w, 3,000 bbl., Arbuckle 3,253-65 ft.
Silica, West, Barton County: Alpine Royalty 1 Schartz, N½ NW SE 1-20-12w, pumped 30 bbl., Arbuckle 3,336-67 ft.
Continental 6 Scheufler, S½ E½ NW 24-20-12w, dry, T.D. 3,440 ft., Arbuckle 3,331 ft.
Stoltenberg, Ellsworth County: Beardmore 7 Talsky, E½ SW NE 8-16-10w, pumped 480 bbl., Arbuckle 3,264-80 ft.
Tisdale gas, Cowley County: Tulsa Oil 1 Miller, SW SE NE 15-32-5, pumped 40 bbl., Bartlesville 3,082-3,103 ft., T.D. 3,112 ft.
Trapp, Russell County: Hissom & Wolfe 1 Michaelis, N½ SE SE 27-15-14w, dry, T.D. 3,385 ft., Arbuckle 3,373 ft.
Shell 14 Bitter, NW NW SW 5-16-13w, pumped 2,460 bbl., Arbuckle 3,323-27 ft.
Virgil, Greenwood County: Henderson 5 Schneider, NW SW SW 9-23-13, pumped 10 bbl., Bartlesville 1,782-91 ft.
Shaffer & Howell 21 Schneider, NE NW NW 15-23-13, pumped 15 bbl., Bartlesville 1,599-1,614 ft.
Yates Center, Woodson County: McCormick 1 Hair, W½ NW NW 23-25-15, dry, T.D. 1,451 ft., Mississippi lime 1,412 ft., show oil.
Zenith, Stafford County: Winkler-Koch 4 Equitable, W½ SW NE 15-24-11w, 3,000 bbl., Misener and Viola 3,765-3,808 ft.

WILDCATS DRILLING

35-1-21w, NE NW . . . . . Barnsdall 1 Rumsey
Drilling 1,960 ft., 12-in. 100 ft.
27-8-32w, E½ NE SE . . . . . Billings 1 Ryan
Lansing 4,283-97 ft., gas and show oil, 6-in. 4,283 ft.
19-10-20e, SW SW SE . . . . . Caufield & Sullivan 1 Ragan
S.D. 1,710 ft., H.F.W.
5-12-16w, NE SE SE . . . . . Cities Service 1 Jantzen
8⅝-in. 225 ft.
1-12-22w, N½ NW NE . . . . . McKnab 1 Krysi
Fort Riley 2,550 ft., Topeka 3,406 ft., Lansing 3,644 ft., drilling 3,715 ft.
34-13-15w, E½ SE NE . . . . . Wakefield 1-A Cook
Fort Riley 1,845 ft., Florence 1,948 ft., Topeka 2,785 ft., drilling 2,880 ft.
9-13-14w, E½ NE NW . . . . . Central 1 Machin
First report.
29-15-1w, S½ SW SW . . . . . Rocket 1 King
Mississippi lime 2,672 ft., stain and show gas 2,705-09 ft., stain 2,714-18 ft., T.D. 2,722 ft., run 5-in. casing.
33-16-12w, W½ NW NE . . . . . Jones 1 Grizzell
10-in. 2,015 ft.
15-16-14w, NE SE NW . . . . . Stearns & Vernon 1 Popp
Topeka 2,820 ft., Lansing 3,125 ft., 8-in. 2,549 ft., 7-in. 3,135 ft., drilling 3,152 ft.
10-17-9w, S½ SE NW . . . . . Phillips 1 Rolfs
Drilling 2,863 ft.
9-21-3e, NE NE SE . . . . . Basinger & Fowler 1 Janseen
First report.
21-21s-13w, E½ SE SW . . . . . Faulkner 1 Ward
First report.
15-21-38w, E½ SE SW . . . . . Stanolind 1 Billinger
Fishing 4,536 ft.
8-22-1w, E½ NE NE . . . . . Winkler-Koch 1 Kaufman
Kinderhook 3,505 ft., Kinderhook lime 3,615-45 ft., gas show oil 3,530-35 ft., T.D. 3,705 ft., P.B.
11-23-12w, N½ NE NW . . . . . Stanolind 1 Hill-B
8-in. 273 ft.
25-25-2e, W½ NW SW . . . . . Carlock 1 Whitson
First report.
5-25-14w, W½ NW NW . . . . . W. W. W. 1 Wilson
Drilling 2,290 ft.
18-26-11w, W½ SW NW . . . . . Reeves 1 Stark
Mississippi lime 3,965 ft., Viola 4,123 ft., cored dense stained limestone 4,135-40 ft., Simpson 4,210 ft., cored 4,235-50 ft., show oil and gas 4,241-42 ft. and 4,235-45 ft., drilling 4,260 ft.
35-27-2e, E½ SE NW . . . . . Aylward 1 Aylward
Drilling 1,540 ft., 12-in. 1,108 ft.
21-28-11e, SW SE SE . . . . . McPherson 1 Clogson
Underreaming 8-in. at 510 ft.
24-28-11e, SE SW NW . . . . . McPherson 1-A Batesman
Drilling 900 ft.
3-32-8e, NE SW NW . . . . . Aladdin 1 Westerfield
Kansas City 1,916 ft., Mississippi lime 2,715 ft., H.F. W. 2,800-15 ft., 6-in. 2,860 ft.
35-34-11w, S½ SE SW Pryor & Lockhart 1 Ishmael
First report.

FOREST CITY BASIN

ST. JOSEPH, Mo., Apr. 21.—Ohio Oil Co. and Harry Harper 1 Sibbernsen in the Falls City pool, NW NE NW of 20-1n-16e, Richardson County, Nebraska, filled 1,100 ft. with oil after cement plug was drilled this week. It was indicated the well might not require acidization. Hunton lime top is 2,204 ft.

Ohio 1 Anne Gerhardt, SW SE SE of 7-1n-16e, Falls City pool, had a 200-ft. fillup and probably will acidize. Top of the Hunton pay lime is 2,283 ft.

Guy Scott et al 1 Oswald, in C NW SW of 15-2n-14e, a quarter mile west of Dawson, in Richardson County, and 12 miles northwest of Falls City, swabbed 2 bbl. of oil per hour after acidization under pressure.

Indian Territory Illuminating Oil Co. 1 Bankers Life, 4½ miles southwest of Shubert in NE SE of 3-2n-15e, Richardson County, Nebraska, has had serious difficulty with loss of circulation in the Silurian while attempting to deepen from Hunton lime to Viola and Arbuckle. The hole was cemented, but the job failed and recementing was ordered.

In Nemaha County, Nebraska, the Phillips Petroleum Co. 1 Neil, 2 miles southeast of Howe in C SW NE of 24-4n-14e, lost circulation in the Silurian at approximately 2,900 ft. This test was dry in the Hunton, top of which was not revealed.

NEBRASKA COMPLETIONS

Richardson County

Falls City pool: Ohio 4 Bucholz, SW NW 17-1-16e, dry, T.D. 2,303 ft., Mississippi lime 1,933 ft., Hunton 2,300 ft., some show oil.
Shubert pool: Henry Bollen 1 Bankers Life, SW SW 30-3-16, pumped 187 bbl. and 80 bbl. water, Hunton 2,515-21 ft.
Wildcat: Transcontinental 1 Hebenstreit, NW SW 8-2-16, dry, T.D. 2,550 ft., Mississippi lime 2,108 ft., base Mississippi 2,257 ft., Hunton 2,498 ft.

MISSOURI

Brian & Nathan 2 Decker, 5 miles east of Mound City in C NW NW NW of 1-61n-38w, Holt County, was drilling at 1,850 ft., looking for Mississippi lime. No. 1 was abandoned at 2,310 ft. because of iron in the hole.

I. T. I. O. 1 D. D. McGinnis, a location 3 miles northeast of Westboro in Atchison County, Missouri, gave contract to F. D. Broadwater, Inc., of Wichita and drilling is to start around the first of May. The I. T. I. O. mapped its structure on the basis of core drilling. Location is C SE SW of 12-66n-39w.

Jackson & Rust 1 June Hays, 3 miles northwest of Watson, in C NE NE of 22-66n-42w, Atchison County, was reported preparing to resume operations after a long shutdown. Hunton lime was topped at 2,092 ft. and cored to 1,192 ft., with no shows. Operators have been seeking to drill on to Arbuckle.

Despite a showing of oil found at 1,800-ft. level, W. H. Coats of New Madrid said the test oil well on the Eddye Phillips property near New Madrid has been pronounced a dry hole and that equipment is being moved to a new location for another test. He said three or four other tests are planned in New Madrid County.

Phillips Petroleum Co. has renewed leases on a block in Ray and Caldwell counties, Missouri. On this block R. L. Campbell has location in NW NW of 21-53n-26w, Ray County, for 1 Rust. This is about 10 miles northeast of Richmond. A portable rotary was moved on location and then moved off. Operator now is negotiating for new contractor.

Cordova-Union Oil Corp. 1 Mrs. Eddye Phillips, U. S. Survey 97, in New Madrid County, found base of the Eocene Wilcox and top of the Midway at 1,005 ft. The Eocene Wilcox is a Gulf Coast formation and has nothing in common with the Mid-Continent Wilcox. Base of Midway and top of Cretaceous was logged at 1,271 ft.; top of Arbuckle chert at 1,560 ft., and top of Arbuckle dolomite at 1,590 ft. The Arbuckle encountered is the Jefferson City formation of the Ozark region of Missouri. The test was drilling at 2,400 ft. A slight show of oil was reported on drilling mud at 1,800 ft., but no stain or odor was noted in the samples. This test made a record that may stand for some time in Missouri. Drillers went 614 ft. in one 8-hour shift.

MISSOURI COMPLETIONS

Holt County

Wildcat: Bun & Nathan 1 Decker, NW NW 1-61-38w, dry, T.D. 2,311 ft., Lansing 613 ft., Mississippi lime 1,865 ft., Hunton 2,212 ft.

IOWA

Ohio 1 J. A. Wisnom, in C NW NE of 23-68n-41w, southwest of the town of Farragut, Fremont County, was drilling at 2,731 ft., looking for St. Peter sand. The Viola could not be identified. Hunton lime was topped at 1,856 ft. and was dry. Cores showed good porosity, but no signs of oil. A wild rumor that went through Iowa a few days ago that oil had been found was due to the action of one spectator who saw shale scum on the slush pit and spread a report far and wide without asking geologists and drillers on the rig at the time.

J. A. Johnson 1 Lucas, 2 miles northwest of Thurman in SW NE SE of 28-70n-43w, Fremont County, Iowa, was reported preparing to resume drilling. It has been shut down below 1,400 ft. Hunton lime was topped at 1,095 ft.

Southwest Texas Fields

(Continued from Page 105)

Colorado field: Humble 10-B King, 154 bbl., ¾-in. choke, T.D. 2,964 ft.
C. Andrade 1-H Trevino, 90 bbl., ¼-in. choke, sand 2,914-24 ft.

Live Oak County

Wildcat: Humphries & Hotchkin 1 L. S. Adams, dry, T.D. 2,510 ft.

Starr County

Kelsey field: Sun 2-B Trevino, dry, T.D. 4,795 ft.
Sun field: Nueces Royalty Co. 1 Olivarez, 78 bbl., 18 hr., ¼-in. choke, perf. casing 4,566-70 ft., T.D. 5,210 ft.
Sun 5-B Speer, 97 bbl., 5/32-in. choke, perf. casing 4,933-38 ft., T.D. 4,967 ft.

Webb County

Glen field: Interstate Minerals 60 Lopez, 60 bbl., pumping, sand 2,147-67 ft.
Transwestern 11 Yeager-Stroman, 84 bbl., pumping, sand 2,181-96 ft.
Wildcat: Transwestern 1 Garza, dry, T.D. 2,420 ft.

Zapata County

Escobas field: Dulup Oil Co. 5-C Garcia, dry, T.D. 448 ft.

SAN ANTONIO DISTRICT

Bexar County

Gas Ridge field: Corning & Leavitt 1 Bitter, 1 bbl., pumping, T.D. 554 ft.
Southwest Drilling Co. 12 Corell, 2 bbl., pumping, T.D. 445 ft.

Caldwell County

Salt Flat field: Wiegand Brothers 13-A Briscoe, 12 bbl., pumping, T.D. 2,490 ft.

Guadalupe County

Elm Creek field: W. L. Marshall 3 Thomas, 1 bbl., pumping, T.D. 875 ft.

Wilson County

Wildcat: J. S. Suttle 1 R. J. Heubinger, 5 bbl., pumping, T.D. 1,807 ft.

SOUTHWEST TEXAS DRILLING REPORT

Bee County

Hewitt & Daugherty 1 L. E. Weiss, J. M. Urange grant, coring shale 4,837 ft.

Brooks County

Union Oil Co. of California 1 Cahavana, SE of Alta Mesa, T.D. 6,652 ft., preparing to abandon.

Dimmit County

Humble 1 Catarina Farm Co., 2 mi. NW from Catarina, drilling shale 5,756 ft.

Duval County

Sun 1-B Black, Pedro de la Zerda Eur., T.D. 4,735 ft., waiting on orders to abandon.

Kenedy County

Hundred & One Oil Co. 2 Kenedy, dry, T.D. 8,500 ft.

Nueces County

Humble 1 State, Red Fish Bay, coring sand 5,671 ft.

San Patricio County

Paul G. Benedum 1 C. B. Jones, dry, T.D. 5,418 ft.

Webb County

Magnolia 1 Hamilton Ranch, 15 mi. NW of Callaghan, Joaquin Galan grant, drilling shale 4,578 ft.

Worth Refining Resumes Operations in Illinois

Operations were resumed last week by Worth Refining Co., Inc., which received approval from federal court to start up its plant at Blue Island, Ill.

Edwin T. Breen, trustee, said that daily crude runs will be from 4,000 to 5,000 bbl. Shipments of products from the plant were resumed April 18.

By
ROBERT INGRAM

Pool Opener Near Shawnee Is Estimated at 5,000 Bbl. a Day

HALL-JORDAN Oil Co. 1 Whitehead, a wildcat southwest of the town of Shawnee in W½ SE SW 36-10-3, appeared this week to be one of the most important pool openers in Oklahoma in several years. A week ago the well was recognized as a pool opener (The Oil and Gas Journal, April 17, 1941), but major companies showed little interest until the well blew out in midweek and when turned into tanks flowed 255 bbl. in an hour. It was shut in for 3 days while more tanks were built, and when opened a second time it flowed 259 bbl. in an hour.

Since the well is flowing from the Wilcox sand and is only some 10 miles from the edge of production in the Greater Seminole district, the importance of the strike seemed to overshadow the new Guthrie discovery in Logan County earlier in the year. Major companies dispatched land men to Shawnee as soon as the news was out of the size of the new well and by week's end it was reported that all leases open had been taken up. Top prices were paid, as much as $250 an acre for land ½ mile from the well, and in some cases it was reported that the high prices had slowed the trading pace considerably.

Although much of the land surrounding the well was open, it was not in entirely new territory. It apparently was well up on a structure that had been mapped by geophysicists a number of times and most of the major companies held "protective" acreage in the neighborhood. However, the closure on which the discovery is located had been interpreted as slight, and a dry hole ¾ mile southwest had cooled enthusiasm considerably. Even when the 1 Whitehead showed saturation and appeared to be a pool opener, there was little excitement.

Stanolind Oil & Gas Co. crews fought mud and high water over the week end in an effort to connect pipe lines for a test and four locations were staked to be started at once. It was indicated that operators would ask for 10-acre well spacing for the new field, even though the discovery well is on a 20-acre unit.

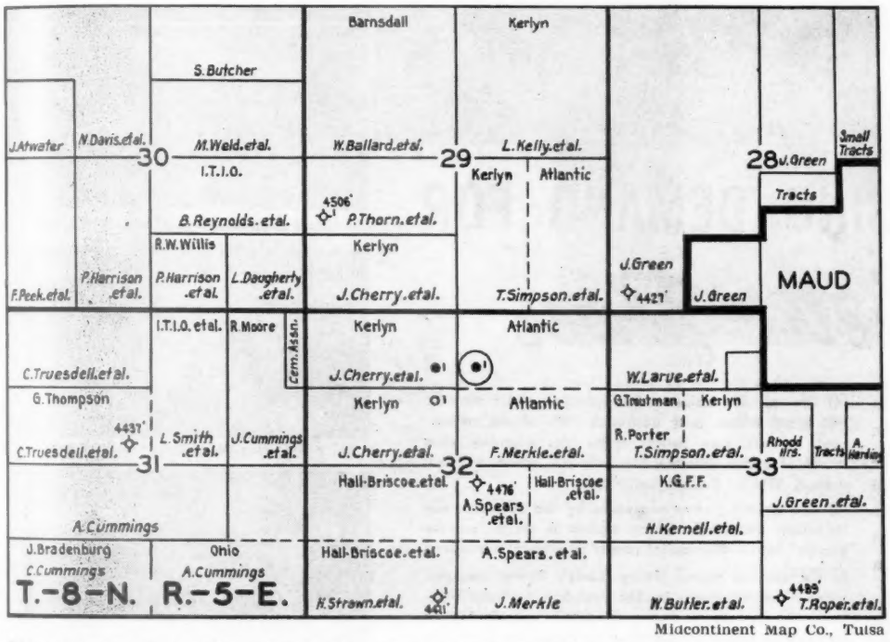
The 1 Whitehead topped the Wilcox at 5,233 ft. and was drilled 12 ft. into the sand, bottomed at 5,245 ft. In addition to the flow of an estimated 5,000 bbl. a day, it was estimated that the well would produce 4,000,000 cu. ft. of gas a day.

F. C. Hall, president of the company, said tubing would not be run but the well would be produced through chokes on the 7-in. casing.

Meantime several other tests in widely scattered areas were showing for discoveries of varying importance (see wildcat report below). One of the most interesting was in Osage County where a number of events have led to a revival of exploration in recent months. This was Dunn-Miller 2 Osage, NE SW NE 18-24-8, which showed 168 bbl. in a 7-hour test at latest report. Total depth is 2,796 ft., about 3 ft. in the Wilcox sand.

West Hewitt Proration Proposed

In the southwestern part of the state, it appeared likely that the lively West Hewitt pool, also known as the Smith field, would soon be put under proration, was discovered in the latter part of 1940. Applications would have the field regulated as a class "C" field, and 5-acre well spacing ordered.



Midcontinent Map Co., Tulsa

Atlantic Refining Co. 1 Merkle, offset to the Kerlyn 1 Cherry, discovery well west of the town of Maud, was being completed this week for an estimated 30 bbl. an hour, about the same production as the 1 Cherry. Both wells are shown above in solid black

Application for general rules and regulations was filed by Gibson & Jennings, Inc., discoverers of the pool, and a hearing was set before the state Corporation Commission for Wednesday, April 30. At present the West Hewitt area is the most active in the state. Completions are running about five or six a week, and about 30 rigs are being operated.

Applications assert there is no well-spacing plan and some properties "are being drilled without regard to property lines or the correlative rights of others," and as many as nine wells have been completed on a 20-acre tract. Likewise there is no general rule on setting of casing, for running tubing nor for completion practices.

Market demand for crude now is estimated at 2,800 bbl. daily, while wells range in capacity from 50 to 1,000 bbl. daily. At present operators are attempting proration on a well basis by voluntary agreement.

The field is not now covered by any of the proration orders nor rules of the commission, although it

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Fields	15	2,293	47,266
Gas wells: Fields	2	*190.02	6,022
Wildcats	1	*3.5	3,753
Dry holes: Fields	7	.....	28,777
Wildcats	6		19,180
Total	31		104,998
Recompletions	1	*.5	.....

*Million cu. ft.

Area to be covered by the order would include Sections 17, 18, 19 and 20-4s-2w, although the production may extend into other sections. Production is from the Ward sand at 1,900 to 2,300 ft., the sand thickness being from 50 ft. to more than 200 ft.

In sending copies of the application and notices of the hearing to producers in the field, Earl Foster, conservation attorney, points out that every producing well in the field is subject to restriction under the present laws, since the field was opened after the 1935 legislative act was approved.

AVERAGE DAILY PRODUCTION

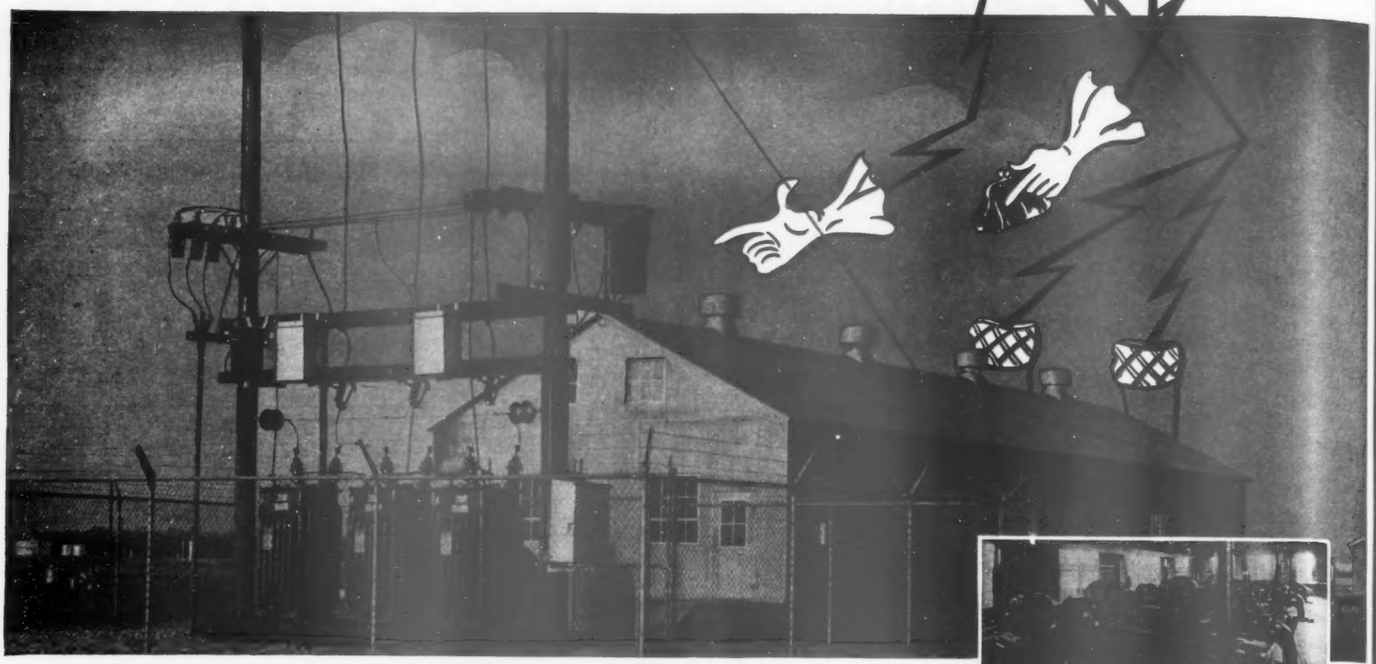
LEADING OKLAHOMA FIELDS

	Apr. 19
Allen	4,750
Billings	6,225
Burbank	7,625
South Burbank	7,550
Balance Osage	17,150
Blackwell district	3,550
Bristow-Slick	6,350
Chandler	1,025
Crescent	1,875
East Cromwell	3,150
Cromwell	2,900
Cumberland	6,425
Cushing-Shamrock	8,850
Dill	7,200
Duncan	3,675
Edmond	3,450
Fish	2,825
Fitts	13,100
Jesse	2,075
Graham-Fox	2,225
Healdton	8,475
Hewitt	8,550
Keokuk	2,750
Konawa	1,000
Lucien	5,625
Moore	1,000
Northeastern counties	17,000
Oklahoma City	93,550
Olympic	1,725
Ramsey	3,550
Sasakwa	1,275
Sholem-Alechem	2,475
Seminole district:	
Bowlegs	6,300
Carr City	2,250
Dora	1,250
Earlsboro	4,000
East Earlsboro	1,700
South Earlsboro	450
Little River	6,325
East Little River	650
Mission	1,350
Seminole	6,450
East Seminole	950
Searight	1,850
Total Seminole	33,525
St. Louis-Pearson	19,450
Tatums-Tussy	5,725
Tonkawa-Garber-Thomas	3,600
Wewoka	1,750
Yale-Jennings	3,325
Total Oklahoma	413,800

"If the commission should grant the 5-acre order, it would cover wells already drilled, as well as wells drilled in the future, and the allowable on each well drilled on an area less than 5 acres would be limited to whatever proportion the area so drilled on bears to 5 acres," Mr. Foster wrote. "We think this is clearly the intention of the law.

"In case any owner has heretofore drilled more than

LOW FINAL COST



Early Induction Motor-Driven Plunger Pump Station

CAUSES INCREASING DEMAND FOR

Utility Electric Power

Pipeline operators save approximately $2,000,000 annually by using Utility Electric Power. This substantial saving, based on a careful study of the pipe line industry, takes into consideration savings in capital investment, maintenance, operating labor, and in fuel. Specifically, here are some of the advantages which effect these savings:

(1) The induction motor-driven centrifugal pump (3600 R.P.M.) station can be installed for about 40% of the cost of any other prime mover type of pump station.

(2) Maintenance cost is about 1/20 that of any other type pump station.

(3) Operating labor is only 1/3 that of any other type pump station.

(4) The salvage value of the induction motor centrifugal pump station may approach 75% of the original cost, at most any period of its life, whereas other types of pump stations the salvage value will not exceed 50% of the original cost.

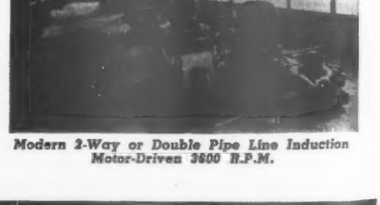
(5) The electric power consumed by the induction motor-driven centrifugal pump station is on a "pay-as-you-go" basis—No capital power investment necessary.

In the past 15 years, Utility Electric Power has provided ¼ of the Pump Station capacity for trunk pipelines. An average increase of 10,000 to 20,000 H.P. is installed annually for pipeline operation, as the result of increasing acceptance of Utility Electric Power.

How Utility Electric Power can save money for you can be better told by your Electric Power service company. Why not ask them for facts concerning your specific problems?

Early Induction Motor-Driven 1800 R.P.M.

Modern Synchronous Motor-Driven 1800 R.P.M.



Modern 2-Way or Double Pipe Line Induction Motor-Driven 3600 R.P.M.

ECONOMIC POWER FOR DEFENSE

Just as the Petroleum Pipe Line Industry saves millions of dollars annually by using Utility Electric Power, the electric utilities stand ready at this time in the interests of National Defense to supply such additional requirements which the pipe line industry may be called upon in order to effect further economies.

Use Utility Electric Power!

PETROLEUM ELECTRIC POWER ASSOCIATION

Box 1498, Oklahoma City, Oklahoma

one well upon a 5-acre unit established by the commission, the allowable to such wells would necessarily be limited to approximately the same amount as if only one well had been drilled thereon."

DISCOVERIES GAGED

Grisso & Eason 1 Royster, SW NW NW 33-6-3, Pottawatomie County, 3,500,000 cu. ft. gas, 1,150 lb. R.P., Haragan 3,699 ft., T.D. 3,753 ft., 5-in. 2,990 ft., perf. 2,869-86 ft.

WILDCATS PLUGGED

22-1-20w, SE NW SE ..... Lynch 1 Rawls T.D. 1,765 ft., old well deepened from 1,615 ft., dry, Jackson County.

4-10-9, SW NW NW ..... Sunray 1 Spillman T.D. 3,485 ft., Viola 3,381 ft., dry, Okfuskee County.

24-10-10, NE NW NE ..... Hembree 1 Walker Location abandoned, Okfuskee County.

29-11-6, SW SW NW ..... Miller 1 Parsons T.D. 4,811 ft., first Wilcox 4,729-69 ft., second Wilcox 4,801-11 ft., dry, Seminole County.

15-19-3, SE SE SE ..... Wood 1 Daniel T.D. 4,405 ft., first Wilcox 4,361 ft., dry, Payne County.

28-21-8 NW SE NW ..... Malernee 1 Lucas T.D. 3,091 ft., Arbuckle 2,940-3,091 ft., dry, Pawnee County.

19-6s-3w, SW NE SE ..... Martin 1 Porter T.D. 1,623 ft., dry, Love County.

FIELD DRILLING COMPLETED

Altus, Jackson County: Gulf 3 Enos, SE NE NE 16-1-20w, 18,870 cu. ft. gas, T.D. 1,667 ft., 7-in. 1,428 ft., P.B. 1,403 ft., perf. 1,114-1,246 ft.

Bowlegs, Seminole County: Delaney 1-A Brooks, NW SW NW 25-8-6, dry, T.D. 4,200 ft., Wilcox 4,191 ft.

Burbank, Osage County: Magnolia 3 De Noya-B, NW SE NW 14-26-6, est. 300 bbl., pinched to 88 bbl. a day, Bartlesville 2,813-91 ft., T.D. 2,891 ft., 7-in. 2,813 ft., shot 2,829-91 ft.

Calvin, Hughes County: Phillips 1 Frame, NW NE NE 8-5-10, flowed 41 bbl. oil and 580 bbl. water, Cromwell 4,455 ft., T.D. 4,474 ft., 5½-in. 4,464 ft.

Chickasha, Grady County: Stanolind 8 Sanford, SW SW 23-5-8w, 190,000,000 cu. ft. gas, Charlson 4,070 ft., 7-in. 4,080 ft., T.D. 4,355 ft., 5½-in. liner 4,344 ft.

Conservation, Pontotoc County: Huddleston 1 Braly, NE NE NE 33-5-6, location abandoned.

McKeown 1 Stringer, SW SE NE 33-5-6, location abandoned.

Cumberland, Marshall County: Pure 1 Thompson-107, NE NE NE 33-5s-7e, flowed 273 bbl. in 22 hr. through 1-in. choke, T.D. 5,070 ft., 7-in. 4,814 ft., first zone 4,818 ft., second zone 4,940 ft.

Droppleman, Okfuskee County: Devonian 1 Phillips-A, SW NW SW 26-12-8, flowed 155 bbl., Cromwell 3,661 ft., 5½-in. 3,658 ft., T.D. 3,699 ft., shot 3,675-91 ft.

Devonian 1 Phillips-B, SW SE SW 26-12-8, flowed 150 bbl., Cromwell 3,619 ft., 5½-in. 3,622 ft., T.D. 3,632 ft.

West Hewitt, Carter County: O'Conner 3 Patterson, SW SE SW 21-4s-2w, pumped 82 bbl., 7-in. 2,347 ft., T.D. 2,382 ft.

Kyle 2 Daugherty, SE SW SW 17-4s-2w, flowed 463 bbl., 7-in. 2,070 ft., sand 2,070-2,128 ft., T.D.

Batson 8 Williams, NW NE SE 20-4s-2w, pumped 92 bbl., 7-in. 2,128 ft., base sand 2,167 ft., perf., T.D. 2,173 ft.

Neustadt 5 Choate, E½ W½ NW NW 20-4s-2w, flowed 265 bbl. through ¾-in. choke, 7-in. 1,911 ft., base sand 1,965 ft., T.D. 1,968 ft.

Kendrick, Lincoln County: Summit 2 Cleer-B, SW NW SW 6-15-5, dry, T.D. 3,614 ft., shot 3,605-11 ft., Prue 3,575 ft., 7-in. 3,517 ft.

Keystone, Tulsa County: Swift 5 McKee, SW SE SW 14-19-10, pumped 12 bbl., Bartlesville 1,786-1,810 ft., T.D., shot.

Langston, Logan County: Amerada-Stanolind 2 Knight, SE SW 12-17-1w, old well P.B. to 4,883 ft., perf. 4,846 ft., acid, 500,000 cu. ft. gas.

West Little River, Seminole County: Newson 2 Smith-B, NW SE NE 20-7-6, flowed 110 bbl., Calvin 2,336-50 ft., T.D. 2,360 ft., 5-in. 2,337 ft.

Lovell, Logan County: Danciger 1 Knecht, SE SE 21-18-4w, temporarily abandoned, first Wilcox 6,155-6,200 ft., T.D. 6,249 ft.

Okemah, Okfuskee County: Keener 1 Hailey, SE NW SE 36-12-9, pumped 65 bbl., Gilcrease zone 3,069 ft., 5-in. 3,067 ft., base sand 3,120 ft., T.D. 3,133 ft., shot.

Ramsey, Lincoln County: Mid-Continent 14 Ramsey, NE SE NW 18-18-2, flowed 145 bbl. an hr., pinched to 150 bbl. a day, 5-in. 4,586 ft., Hunton 4,582-4,615 ft.

Seminole, Seminole County: Stanolind 2 Grisso-A, SE NW SW 15-9-6, pumped 36 bbl., Senora sand zone 2,870 ft., T.D. 2,921 ft., 5-in. 2,875 ft., shot 2,894-2,918 ft.

Josephson 1 Lincoln, SE NW 34-9-6, location abandoned.

Slick, Creek County: Tibbens 4 Harvey, SW NE NW 9-14-10, location abandoned.

St. Louis, Pottawatomie County: Smith 1 Beal, SW NE SW 5-7-4, dry, T.D. 4,475 ft., dense 4,405 ft., dolomite 4,450 ft.

Smith 2 Vance, SW SW SW 5-7-4, dry, T.D. 4,031 ft., Hunton 3,999 ft.

Zephyr 1 Harrison, SW SE SW 5-7-4, dry, T.D. 3,965 ft., Hunton 3,934 ft.

West Weleetka, Okfuskee County: Hembree 1-A Walker, SE NE SE 13-10-10, dry, T.D. 2,243 ft., P.B. 2,214 ft., sand 2,203 ft.

Miscellaneous, Creek County: Bryan 1 Deere, NE SE NE 34-14-7, pumped 104 bbl., Simpson 2,962 ft., Wilcox 3,937 ft., 7-in. 3,937 ft., shot 3,967-74 ft., T.D. 4,020 ft., H.F.W., P.B. 3,975 ft.

WILDCATS DRILLING

East of the Meridian

27-2-9, W½ SE NW ..... Ramsey 1 Harryman Drilling 3,537 ft., Coal County.

16-3-1, E½ NE SE ..... Stanolind 1 Little Sand 3,400 ft., cored shaly sand bleeding oil 3,407-18 ft., basal bromide 3,419 ft., cored stained conglomerate 3,418-23 ft., D.S. test 3,415-23 ft., open 1 hr., recovered mud, D.S. test 3,415-23 ft., flowed water and show gas, after 20 min. flowed some oil, flowed salt water, mud, and oil, blew out while breaking down, bottom 12 stands salt water, cored gray stained sand 3,572-77 ft., McLish 3,450 ft., Oil Creek 4,045 ft., drilling 4,130 ft., Garvin County.

14-5-6, SE SE SE ..... Norville 1 Fleet Sand, some show oil 1,635-43 ft., stained sand 1,933-80 ft., cored soft sand stained at top and salty at base 1,937-56 ft., cored bleeding sand with shale streaks 2,009-17 ft., drilling 2,225 ft., Seminole County.

29-6-5, SE NE NW ..... Hall-Jordan 1 Swan Cored stained hard dolomite 3,608-20 ft., cored dry sandy dolomite 3,820-32 ft., no recovery, Wilcox 3,795 ft., S.D., Pottawatomie County.

31-7-7, SW NE NE ..... Eagle 1 Mann Calvin zone 1,610-1,735 ft., Senora sand series 1,970 ft., some show oil 2,010-18 ft., Senora lime 2,077 ft., cored stained sand 2,014-21 ft., cored stained lime 2,035-45 ft., cored 2,045-65 ft., drilling 2,208 ft., Seminole County.

16-9-4, C E½ ..... Crosbie and Atlantic 1 School First report, Pottawatomie County.

14-9-7, SW SE NE ..... McIntyre 1 Brown T.D. 4,337 ft., P.B. 3,550 ft. to test Booch at 3,260 ft., Seminole County.

27-9-24, NW SW NW ... Western Oklahoma 1 Ward Drilling 200 ft., to be a deep test, Le Flore County.

23-9-11, SW NW SE ..... Arrow 1 Grannerman Booch 2,250 ft., Gilcrease 2,662 ft., T.D. 2,799 ft., fishing, Hughes County.

33-10-8, NE NE NE ..... Mico 1 Davis T.D. 3,513 ft., 5½-in. 3,488 ft., drilling plug and blew out, est. 15,000,000 cu. ft. gas, dropped to 5,000,000 cu. ft. in 12 hr., spraying salt water, testing, Seminole County.

14-11-10, NW SW NW ..... Alma 1 Replogle Lower Cromwell 3,193-98 ft., T.D. 3,198 ft., filled 700 ft. with fluid, shut in 3 days for tanks, flowed 126 bbl. of fluid in 27 hr., cut 60 per cent salt water, testing, Okfuskee County.

16-12-5, NE SW NE ..... Morgan-Gulf 1 School Oswego 3,630 ft., Prue zone 3,635 ft., Bartlesville 4,113 ft., drilling 4,178 ft., Lincoln County.

15-12-9, NW SE NW ..... Texas 1 Butcher P.B. 3,323 ft., drilled plug, hole caved, cleaning out, Okfuskee County.

16-12-10, NE NW SW ..... Weimer 1 Williams Drilling 1,160 ft., Okfuskee County.

16-13-16, NW SW NW ..... Stormfeltz 1 Weimer Salt sand 515-715 ft., Booch 1,022-44 ft., show gas, Big lime 1,703 ft., drilling 1,708 ft., Muskogee County.

20-14-9, SW SE SW ..... Burke-Greis 1 Peabody Hogshooter 1,160 ft., Layton zone 1,175-1,230 ft., drilling 1,960 ft., Creek County.

8-15-5, NE NE NW ..... Wilcox 1 Curry Hogshooter 2,410 ft., Checkerboard 2,740 ft., Cleveland 2,770 ft., slight odor 2,770-72 ft., Oswego 3,412-79 ft., Prue 3,488 ft. stain, cored 2,772-82 ft., recovered shaly sand with slight odor, cored shale with thin sand streaks, odor in top 1 ft. 3,491-3,501 ft., drilling ahead, Lincoln County.

23-16-3, NW NW SW Helmerich & Payne 1 Hennessey

(Continued on Page 139)

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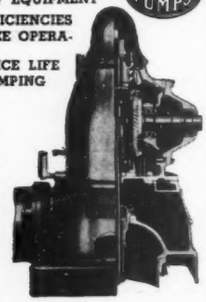

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Among the Drilling

ALLEN & MORRIS, San Antonio, Tex., has started a new operation in the Shield field, Nueces County, Texas, for Shield Oil Co. Another rotary is running for the company in the same county. Two other operations are reported in the West Ranch field, Jackson County, for the Darby Petroleum Co., and in Lincoln Parish, North Louisiana, where Herman Brown 1 Louisiana is drilling below 9,500 ft.

STICE Drilling Co., Beeville, Tex., extended gas-distillate production in the Benavides field, Duval County, Texas, approximately ½ mile southeast with the completion of Hiawatha Oil & Gas Co. 31 Parr, which is flowing an unestimated amount of gas and distillate through perforated casing at 5,725-35 ft.

C. & I. Drilling Co., Houston, Tex., has cemented 7-in. casing in the company's joint wildcat test located on the old Pine Prairie salt dome, Evangeline Parish, coastal Louisiana. The hole is bottomed at 8,239 ft., and casing was cemented after sand with an oil odor was cored.

PATRICK & TYRELL Drilling Co., Houston, Tex., is nearing the top of the Wilcox formation in Navarro 1 Cooper, a projected Wilcox test west of Alexandria in Rapides Parish, Louisiana.

H. J. DeARMAN, Houston, Tex., received contract for an 8,000-ft. wildcat to be drilled in Plaquemines Parish, Louisiana, for the Union Sulphur Co. In La Salle Parish, North Louisiana, a wildcat is being completed for the Landreth Production Co.

JORDAN Drilling Co., Houston Tex., is preparing to move a rotary north of Segno, Polk County, Texas, for a projected 7,500-ft. Wilcox test which will be drilled for the company.

O. W. DYER, Houston, Tex., is preparing to run casing in Gulfboard 1 State, a wildcat in San Antonio Bay, Calhoun County, Texas. The well is bottomed at 6,405 ft. Casing is being run for a production test, although details were not available.

PARKER Drilling Co., Houston, Tex., received contract from Fohs Oil Co. for a 10,500-ft. test on the north flank of the Gueydan field, Vermilion Parish, Louisiana. Three other active operations are reported in the district, one being in the Point Au Fer area, Terrebonne Parish, for Barnsdall Oil Co., one at the Avery Island dome, Iberia Parish, for Gulf Refining Co., and another at the Anse la Butte field, St. Martin Parish, for Glassell & Glassell. The company has one rig in the Port Allen area, West Baton Rouge Parish, where a new field was recently opened for the Amerada Petroleum Corp.

MORRIS & HAMILTON Drilling Co., Houston, Tex., cemented 13⅜-in. casing in W. R. Davis Co.'s projected 10,000-ft. Wilcox test in the Garwood area, Colorado County, Texas. Another rig is running for the same company in the Lakeview area, Wharton County, while in the Rio Grande Valley area, and in the southern part of the Rincon field, Starr County, two operations were recently started for W. R. Davis.

R. L. CHANDER, contractor of Tyler, Tex., has started operations at a wildcat test in Fannin County, Texas, for Damon Oil Co. of Tulsa. Damon 1 Chaffin is on a 101-acre tract in the southwest corner of the J. C. Ketchum Survey, 3½ miles northeast of Bonham. All zones from the Woodbine to the Travis Peak will be tested in going to its contract depth of 4,500 ft.

W. B. HINTON, Mount Pleasant, Tex., has received contract to drill a wildcat test in Morris County, northeastern Texas. It will be for C. B. Zuber, Dallas, and is on the A. L. Blackburn 100-acre tract in the E. B. Smith Survey, south of the Jenkins community. It is contracted to 6,500 ft. to test the Woodbine and the Travis Peak levels. Derrick has been erected and work is scheduled to start this week.

CLYDE PULSE, Hutchinson, Kans., contractor, will test Viola lime in a Pratt County, Kansas, wildcat operation he is drilling for George Reeves and others of Wichita. The hole was drilled to 4,335 ft. in the Arbuckle dolomite and plugged back to 4,150 ft.

VIRGINIA Drilling Co., Wichita, Kansas, has started operations on 1 Kendrick, a test in the Silica West pool, Barton County, Kansas, in 17-20-11w.

KNOX Drilling Co., Houston, Tex., will drill a 5,000-ft. wildcat test in the Navidid sector of Jackson County for W. S. Boyle and John G. Mayo,

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Contractors

Houston operators. The test will be on the Mrs. Lula W. Sartain farm, a mile southwest of Boyle & Mayo 1 Terrell, which was completed recently for 500,000 cu. ft. of gas through perforations at 3,786-93 ft. The Sartain operation will be on acreage farmed out by Harrison & Abercrombie.

FAIN-PORTER Drilling Co., Oklahoma City, Okla., will drill a deep test 2½ miles south of Duke in Jackson County, Oklahoma, in C SE SW of Section 30-2n-22w. Contract calls for drilling to 6,100 ft.

KIOWA Drilling Co., Wichita, Kans., is moving rotary to location for 1 Machin, 3 miles northeast of Gorham in southern Russell County, Kansas. The wildcat test is 2½ miles north of the Russell (Arbuckle) field and 3 miles northeast of the Atherton field. Associated with Kiowa Drilling Co. is Parry A. Thayer of Wichita and Central Petroleum Co., Tulsa.

B. G. BYARS Drilling Co., Tyler, Tex., is moving rig from the new East Texas discovery well 2 miles northeast of the Long Lake pool in Anderson County to a second location for Tex-Harvey Oil Co. The discovery well, 1 Cartmell, in the Edley Ewing Survey, 6 miles southeast of Palestine, was completed at 5,387 ft. and production is coming through perforations from 5,370-74 ft. The discovery well was drilled and completed in 11 days.

ROCKY MOUNTAIN Drilling Co., Los Angeles, Calif., has been awarded contract for two wells on Ohio Oil Co. acreage in the Lance Creek field, Wyoming. The locations are 4 Richards and Comstock and 20 Carrie Putnam. The drilling company also has received location for Ohio Oil Co. 4 Hoskins in the Byron field, Big Horn County, Wyoming.

PORTABLE Drilling Co., Tulsa, codiscoverer with KGFF Oil Co. of the Castle field, Okfuskee County, Oklahoma, has petitioned the Corporation Commission to establish field rules requiring 20-ac. spacing. The drilling company said that drilling and completing wells in the Castle field will cost about $25,000.

HELMERICH & PAYNE, Inc., Tulsa contracting and operating firm, is planning a wildcat test in northeastern Lea County, New Mexico, across the state line from southwestern Yoakum County. The wildcat operation will be in Section 3-14-36 on a core-drilled block held by Phillips Petroleum Co.

OLSON Drilling Co., Tulsa, contractor on the 9,000-ft. test being drilled for Humble Oil & Refining Co., Stanolind et al, in Hale County, Texas, is proceeding below 3,200 ft. Top of anhydrite was called at 1,115 ft. after an analysis of samples. The test, 1 Byrd, is in Section 17-X-TT.

DELTA Drilling Co., Shreveport, La., has completed a gas well near Greenwood in Caddo Parish, Louisiana. The well produced 5,000,000 cu. ft. daily from 2,592-2,602 ft.

WYNN CROSBY Drilling Co. has received contract to drill an 8,000-ft. wildcat test for Providence Oil Co. of Houston, Tex., 2 miles west of Clodine in Fort Bend County, Texas. The test is on the Hatfield farm and on a block of 3,000 acres.

B. G. BYARS Drilling Co., Tyler, Tex., this week will move a rig to American Liberty Oil Co.'s wildcat location, 2½ miles southwest of Ironton in western Cherokee County, Texas. Location is on the Jeff Austin 20-acre farm in the Z. Batten Survey.

BASS & DILLARD, Greggton, Tex., has started a wildcat operation on the W. M. McGregor farm, E. Goodwin Survey, southeast of the Vogtsberger area in Archer County, Texas. The test is scheduled to 6,000 ft.

OLSON Drilling Co. and Bryce McCandless 1 Crockett, 2 miles southwest of the Apco Ordovician field in Pecos County, Texas, was drilled deeper from 4,518 ft. in an effort to reduce the gas-oil ratio. Another production test from total depth of 4,526 ft. resulted in flow of 438 bbl. in 3 hours.

R. & J. Drilling 1 Dan Pavillard, 3 miles northwest of Amarillo in Potter County, Texas, has set surface pipe at 350 ft. and resumed drilling.

RICHMOND Drilling Co., Midland, Tex., has moved rig to location for J. W. Brown, Inc., 1 State, a scheduled 5,300-ft. wildcat operation in Lea County, New Mexico, 6 miles west of Lovington in 4-16s-35e. Richmond has moved to its own location for 1 State in 22-17s-33e, a wildcat test about midway between the Vacuum and Maljamar fields. The drilling company last week received contract to drill Mascho Oil Co. 1 University, a wildcat 5 miles northwest of Shafter Lake in northwestern Andrews County, Texas.

CHARLES E. MORRISON Drilling Co., Wichita Falls, Tex., is moving rig to location for 1 G. W. Wolf, a 2,500-ft. rotary test 4 miles west of Burkburnett in Wichita County, Texas.

ROCKETT Drilling Co., Wichita, Kans., has assigned its wildcat operations in Saline County, Kansas, to John B. Allison of McPherson, Kans. The Rockett operation, 1 King, in C S½ SW SW 29-15-1w, had set 5½-in. casing at 2,702 ft. The test is 10 miles north of the Roxbury field in McPherson County, Kansas.

BODINE Drilling Co., Great Bend, Kans., has resumed drilling after setting surface casing in a test in the new Sheaffer field, Stafford County, Kansas.

ZEPHYR Drilling Co. and Leader Oil Co., both of Tulsa, joined last week in purchase of all physical properties of Hawkeye Oil Co. Properties acquired include 15 Arbuckle lime wells in the Hittle field, 16 Bartlesville sand wells in the Frog Hollow pool and 1 Wilcox well in the Zyba pool, all in southern Kansas. Zephyr, as contractor, was drilling a new test in Cowley County, Kansas, for Hawkeye when the deal was consummated. S. C. Canary is general manager for Zephyr and Mac McClintock is vice president. F. B. Parriott is president of Leader Oil Co.

PEGG BROTHERS Drilling Co., San Antonio, Tex., is moving rig to the Day field of Guadalupe County, Southwest Texas, for a test in the J. Hinds Survey, 2½ miles south of Luling.

OSAGE Drilling Co. last week completed two wells in the Slaughter field, Cochran County, Texas. Completions were Osage 3-A Moore and 2-C Moore. The former well produced 607 bbl. of oil daily after treatment with 9,000 gal. of acid, and the latter flowed 337 bbl. daily after treatment with 8,000 gal.

W. G. RAY is rigging up for two wells to be drilled for Sinclair-Wyoming Oil Co. in the Tinsley field of Yazoo County, Mississippi. The wells are Sinclair-Wyoming 1 and 2 Sorrell.

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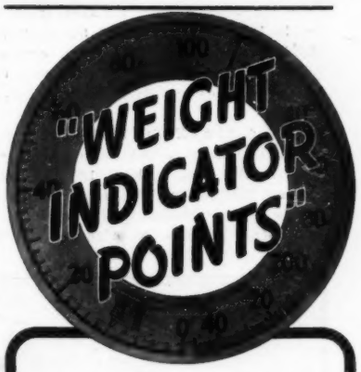

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By
GEORGE WEBER

Hemphill Discovery Is Fourth Wilcox Pool in Year

SHREVEPORT, La., Apr. 21.—Discovery of a new Wilcox oil field in southern La Salle Parish was confirmed this week by completion of the J. D. Critchett et al 1 Jones, NW NW 41-7-3e. Named the Hemphill field, it marks the fourth discovery of oil production in the Wilcox formation within the past year. The discovery well topped Wilcox at 2,560 ft. and drilled to a total depth of 3,963 ft. The producing sand was perforated at 3,623-26 ft., over 1,000 ft. in the Wilcox. On initial gage the well flowed 338 bbl. of fluid, comprising 60 per cent salt water and 40 per cent 37.6-gravity oil through a ¼-in. choke. Tubing pressure was 500 lb., and casing pressure 1,200 lb.

The new discovery is about 3 miles southeast of the Nebo field, where 17 wells produce from the Wilcox formation. In contrast to much of La Salle Parish acreage, the ownership around the new discovery is extensively divided. Most of the other new fields in the parish are on large lumber-company tracts and as a result development has been steady but gradual.

Play Started by Olla

Hemphill follows in a series of new oil discoveries incited by the discovery of the Olla field in March 1940. Wildcatting, which had previously been directed to the top of the Wilcox following Urania, Tullos and Georgetown development, now is extended deeper into the Wilcox where the new production is found. Nebo, Summerville and Little Creek discoveries and new gas production at Standard, Summerville and Trout Creek previously have resulted from the play. All are in La Salle Parish, but the current leasing, geophysical work and wildcatting campaign embraces Winn, Grant, Caldwell, Catahoula, Concordia and Tensas parishes and is extending eastward into Mississippi.

LITTLE CREEK SECTOR.—Two rigs are drilling. Placid Oil Co. completed 1 Ganey for one of the best wells in the area, making 125 bbl. oil with only 2 per cent salt water. This extended production in the field a slight distance to the southwest.

SUMMERVILLE.—Two rigs are active in this area which is near Little Creek. Placid Oil Co. spudded 3-C Tremont last week. It is about 3 miles northwest of the Little Creek area and will be watched with interest. Another wildcat closely watched is H. Scivally 1 Crooks, 1-6-4, near the southeast shore of Catahoula Lake in southeast La Salle Parish.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
North Louisiana			
Oil wells: Caddo	2	40	3,173
Hemphill	1	135	3,963
Nebo	1	110	3,580
Olla	3	526	7,300
Little Creek	1	122	2,816
Dry holes: Lisbon	1	.....	*215
South Urania	1	.....	1,670
Miscellaneous (wildcats)	3	.....	9,053
Total	13	933	31,770
Arkansas			
Oil wells: Smackover	1	110	2,710
East Texas Border			
Gas wells: Joaquin	1	†40	5,062

*Old well drilled deeper, footage includes only deepened footage.
†Million cu. ft.; 152 bbl. condensate.

Other North Louisiana operations continued quiet. At Greenwood, Delta Drilling Co. has another gas well despite the show of oil in the shallow Ozan sand. Operators perforated casing above the section which showed oil saturation and the well is producing 3,000,000 cu. ft. daily.

ARKANSAS

STEPHENS FIELD.—In Columbia County further operations in the deeper Smart sand attracted interest. Crow Drilling Co., which originally found oil shows at that level in 1 Smart, is shut down although small oil flow together with salt water have been tested. Fitzwater & McClerkin have encountered the Smart sand at 3,425-33 ft. in 1 C. C. Smart and are awaiting orders.

DORCHEAT.—Drilling activity at Dorcheat indicates an active campaign. Much will depend on the outcome of the McAlester Fuel Co. 1 Franks, about 3 miles east of present production in the field. Geologists consider chances bright for success in the Smackover lime. Dorcheat structure apparently extends over a considerable area, the west end of which is now developed. This, based only on geophysical information, is problematical, but contours of the Smackover lime and isopachs of the same formation support the contention that Dorcheat will develop into a major pool.

McKAMIE.—Another field undergoing increased drilling activity is McKamie, the large gas-condensate field in Lafayette County. Test results on Barnsdall Oil Co. 1 Cornelius have not been revealed, but the well is believed to produce oil from a separate porous streak below the main gas-condensate zone. Perforations were shot in both sections, and it is impossible to determine definitely the character of the lower production unless packer is set. Several interesting wildcats are progressing in South Arkansas, but they have not reached depths of particular interest.

AVERAGE DAILY PRODUCTION

NORTH LOUISIANA

	Apr. 19
Bellevue	610
Caddo, light	6,150
Caddo, heavy	2,100
Converse	565
Cotton Valley	13,505
Cross Lake	2,850
De Soto and Red River	1,000
Elm Grove	310
Haynesville	2,510
Holly	90
Homer	2,850
Lisbon	3,065
Little Creek	150
Nebo	1,560
Olla	10,320
Pleasant Hill	90
Rodessa	14,795
Sarepta-Carterville	235
Sligo	2,320
South Olla	100
Sugar Creek	1,350
Urania	2,265
Zwolle	1,275
Total North Louisiana	69,580
Rodessa, Texas	14,750

SOUTH ARKANSAS

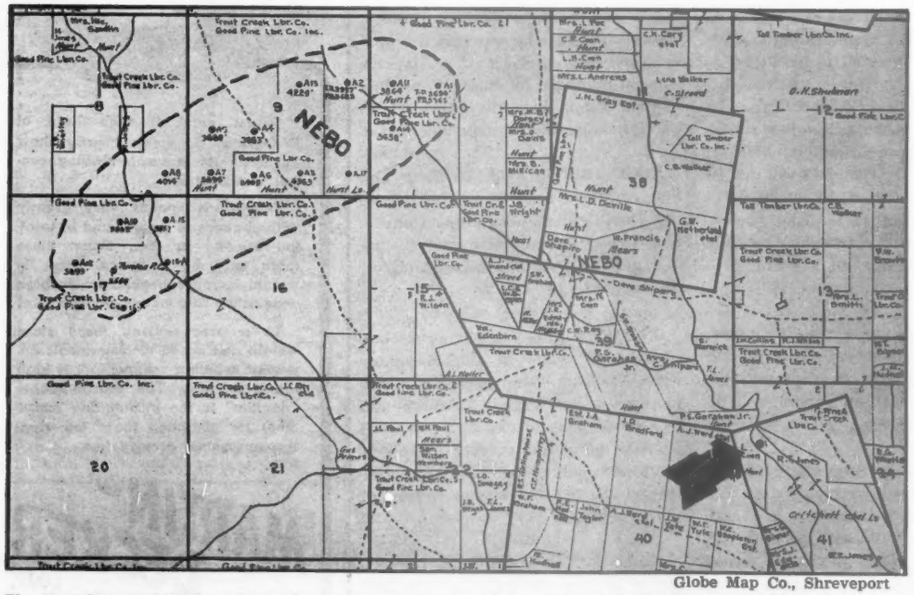
Atlanta	2,710
Big Creek	135
Buckner	2,410
Champagnolle	1,065
Dorcheat	1,810
El Dorado	1,545
Fouke	295
Lewisville	400
Lisbon	210
Magnolia	19,600
McKamie	2,400
Miller County	235
Nevada	565
Nick Springs	1,035
Rodessa	1,650
Schuler	16,400
Smackover, light	1,835
Smackover, heavy	13,215
Stephens	490
Troy	1,005
Urbana	1,650
Village	970
Total South Arkansas	71,630

MISSISSIPPI

Tinsley	22,084
Pickens	666
Total Mississippi	22,750

EAST TEXAS BORDER

British American Oil Producing Co. 1 East Texas Iron Ore, a Cass County wildcat north of Rodessa, is spudded, and will attract considerable interest when it approaches the Rodessa section of the lower Glen Rose formation. A new Bowie County wildcat near Maud and field operations in the Waskom and Joaquin



Globe Map Co., Shreveport

The Hemphill oil field, brought in this week with the completion of the J. D. Critchett et al 1 Jones, is the fifth oil field to be discovered below the top of the Wilcox formation in La Salle Parish within the past 13 months. It is located near the shore of Catahoula Lake in southeastern La Salle Parish, and lies 3 miles southeast of the Nebo field

gas-condensate fields of Harrison and Shelby counties round out East Texas border development of current interest.

NORTH LOUISIANA COMPLETIONS

Caddo—Caddo Parish

Roy L. Bornitz 3 Ramsey.....SW NE SE 32-21-15
Pumped 10 bbl., T.D. 1,588 ft., 6⅝-in. casing 1,401 ft., 4,000 gal. acid.
Weaver Perry Oil Co. 5 Pardue..SE NW NW 33-21-15
Pumped 30 bbl., T.D. 1,585 ft., 7-in. casing 1,395 ft., 4,000 gal. acid.

Lisbon—Claiborne Parish

Magnolia Pet. Co. 3 English....N½ SE NW 31-21-5
Deepened from old T.D. 5,283 ft., drilled to 5,498 ft., dry.

Wildcat—De Soto Parish

Schubert Oil Corp. 1 Scott.....SE NW SE 29-14-13
T.D. 3,007 ft., dry.

Wildcat—Franklin Parish

J. M. Rush et al 1 Moore.....NW NW NE 13-11-6e
T.D. 4,505 ft., dry.

Wildcat—Grant Parish

Inabinett & Pipes 2 Erwin.....NE NE SE 9-9n-1e
T.D. 1,541 ft., salt water.

Wildcat—La Salle Parish

J. D. Critchett et al 1 Jones.....NW NW 41-7-3e
338 bbl., 60 per cent salt water, 40 per cent 37.6-gravity oil, ¼-in. choke, T.P. 500 lb., C.P. 1,200 lb., T.D. 3,963 ft., 5½-in. casing 3,690 ft., perf. 3,623-26 ft., Wilcox sand.

Olla—La Salle Parish

H. L. Hunt 9 Goodpine.....NE NE 18-10-3e
135 bbl. oil, 35 bbl. salt water, gas lift, T.P. 0 lb., C.P. 230 lb., T.D. 2,446 ft., 7-in. casing 2,445 ft., perf. 2,246-50 ft. and 2,255-64 ft., upper central sand, Wilcox.
Placid Oil Co. 84 La. Central.....SW NW 2-9-2e
280 bbl., 2 per cent salt water, 12/64-in. choke, T.P. 300 lb., C.P. 850 lb., T.D. 2,449 ft., 7-in. casing 2,449 ft., perf. 2,076-86 ft., Kraft sand, Wilcox.
Placid Oil Co. 3 Silis.....25-10-2
117 bbl. oil, 5 bbl. salt water, 16/64-in. choke, T.P. 300 lb., C.P. 850 lb., T.D. 2,405 ft., 7-in. casing 2,403 ft., perf. 2,198-2,201 ft., Wilcox.

Nebo—La Salle Parish

H. L. Hunt 18-A Goodpine.....17-7-3e
110 bbl. oil, 16 bbl salt water, 20/64-in. choke, T.P. 125 lb., C.P. 750 lb., 7-in. casing 3,579 ft., perf. 3,404-16 ft., Wilcox.

South Urania—La Salle Parish

Lion Oil Ref. Co. 3 Goodpine....SW SW SW 25-9-1e
T.D. 1,670 ft., salt water.

Little Creek—La Salle Parish

Placid Oil Co. 1 Ganey.....SW SW 32-9-2e
125 bbl. oil, 3 bbl. salt water, 16/64-in. choke, T.P. 150 lb., C.P. 540 lb., T.D. 2,816 ft., 7-in. casing 2,735 ft., perf. 2,406-21 ft., Wilcox.

NEW LOCATIONS

Wildcat—Claiborne Parish

Harold A. Wright 1 Rainach.....SW NE 16-22-5

Wildcat—La Salle Parish

Placid Oil Co. 3-A Tremont.....SW NW 18-9-2e

NORTH LOUISIANA DRILLING REPORT

Caddo Parish

L. M. Calhoun, Tr. 1 Scott.....NW 8-16-16
Set 16-in. casing 68 ft., S.D. 95 ft., moved off light rig.

De Soto Parish

J. E. Stack et al 1 Cook.....NW NE 32-13-14
Set 7-in. casing 2,890 ft., waiting on cement.

La Salle Parish

Big West Drilling Co. 1 Whatley.....NE NE 25-8-2e
T.D. 3,927 ft., S.I.
Delta Drilling Co. 1 Hughes.....NE NE SW 22-8-1e
Coring 4,023 ft.
M. L. Meredith 1 Grey .....NE NE 36-8-2e
S.D. 50 ft.

Lincoln Parish

Big West Drilling Co. 1 Patton est. E½ W½ SE 7-20-4w
Drilling sandy shale 7,365 ft.
Herman Brown 1 Ark. La. Gas.....SW NE 11-17-4
Drilling hard sand 9,688 ft.

Morehouse Parish

Union Prod. Co. 1 E. M. White, irregular Sec. 37-20-6e.
Rigging up.

Sabine Parish

Plummer & McDaniel 1 Phares..NW NW SW 4-5-12
T.D. 4,497 ft., set 7-in. casing 2,455 ft., report 11 ft. sand between 2,400-55 ft.

Winn Parish

Nat Wissman 1 Quinn .....Irregular Sec. 38-9-6w
S.D. sandy shale 950 ft., 10¾-in. casing 250 ft.

ARKANSAS COMPLETIONS

Smackover—Union County

J. D. Reynolds 3-B Laney heirs....NE SW NW 8-16-16
Pumped 220 bbl., 50 per cent salt water, T.D. 2,710 ft., 5½-in. casing 2,710 ft., perf. 2,529½-30 ft.

NEW LOCATIONS

Wildcat—Jefferson County

Patterson & Stratton 1 F. & D. Stratton.....
SE NW NE 35-8s-9w
Rigging up.

ARKANSAS DRILLING REPORT

Clark County

Christman, Coker & Grieves 1 Sparkman.....
NW NE NE 11-11-20
8¼-in. casing 30 ft., top Nacatoch 535 ft., report show heavy oil, T.D. 583 ft., S.D., waiting orders.
Coker, Christman & Grieves 1 Williams.....
NE NE NE 7-11-20
Drilling shale 1,110 ft.

Columbia County

McAlester Fuel Co. 1 Franks.....SE SE 16-18-21
Recementing split casing 2,200 ft., T.D. 2,283 ft.
Phillips Pet. Co. 1 R. S. Warnock, Jr. SW NW 1-17-20
Set 9⅝-in. casing 3,110 ft., waiting on cement.

Faulkner County

Cato Oil Co. 1 R. R. Harrell.....SE SW 35-4n-12w
S.D. 3,525 ft.

Lonoke County

A. V. Riley 1 J. T. Gunter.....NW NW SE 17-5n-10w
Drilling 2,825 ft.

Miller County

K. E. Jennings and J. J. Oil Co. 1 H. T. Wood.....
NE NE NE 33-18-28
Deepening old well from old T.D. 4,574 ft., moving in rig.

Ouachita County

Jack Carnes 1-B Rath & Cartier, Inc., N½ NE 2-14-18
Drilling sandy shale 1,116 ft.

Prairie County

Alvin E. Stark 1 Fidelity Mutual..NE NE SW 16-2n-6w
Drilling 990 ft.

Union County

Crescent Drilling Co. 1 Burns.....NE SW 13-18-17
Set 13⅜-in. casing 225 ft.
C. H. Murphy 1-C Cates.....NW SW 33-18-15
Flowed 92 bbl. fluid, 98 per cent salt water, ¼-in. choke, T.P. 850 lb., C.P. 1,800 lb., T.D. 7,820 ft.

EAST TEXAS BORDER COMPLETIONS

Joaquin—Shelby County

Paul Pewitt 1 J. Childers.....William Snider Sur.
Est. 40,000,000 cu. ft. gas, 152 bbl. condensate, ⅝-in. choke, T.D. 5,062 ft.

EAST TEXAS BORDER DRILLING REPORT

Bowie County

Normandie Oil Co. 1 E. Powell..John S. Herring Sur.
First report, location.

Cass County

British American 1 East Texas Iron Ore, Lavenia Moren Sur., spudded.
W. A. Patterson 1 Orr.....Morris Sur.
S.D. 2,228 ft.

Marion County

P. L. Withers et al 1 T. G. Allen..Robert Potter Sur.
Drilling 2,467 ft.

Sabine County

Sturm & Womack 1-A Keith.....L. Grace Sur.
No report.

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The Oil and Gas Journal

BOX 1260-J **TULSA, OKLAHOMA**

Possible 10,000-ft. Ellenburger Discovery in Crane County

By
R. MARNE SANFORD

MIDLAND, Tex., Apr. 21.—Possibility was seen the past week that a new oil discovery might be completed in Crane County and below the 10,000-ft. level. The discovery, if completed, would be the first field in West Texas to find production below the 10,000-ft. level and one of four of the deepest fields in the State of Texas, the other three deeper producing spots being on the Gulf Coast.

The indicated discovery well is Gulf Oil Corp. 1-F University, wildcat in eastern Crane County and located 990 ft. from the south and east lines of Section 22, Block 31, University Lands Survey. Bottomed at a total depth of 10,656 ft., the 7-in. casing is being cemented 50 ft. off bottom or at 10,606 ft. Several oil-stained cores were recovered in the last 50 ft. of hole, however, the true extent of the oil shows have not yet been determined. The test, which has been actively drilling since early in May 1940, is credited with having topped the Simpson section at 9,600 ft. and the Ellenburger lime zone at 10,626 ft.

This wildcat has been drilled as a "tight" operation ever since its start, however, when the geological information concerning the test is released it should do much to clarify the lower Paleozoic structural conditions throughout the Crane and Pecos county areas which is at present the focus of the majority of the Permian basin's exploratory work.

The depth record for the Permian basin still is held by Gulf 103 McElroy, 10 miles to the southeast and in Upton County, which went to 12,786 ft. The second deepest was the old Humble 1 Pollock, in eastern Upton County, which was carried to 11,144 ft.

SUMMARY OF COMPLETIONS

Southern West Texas

	No.	Bbl.	Footage
Oil wells: Johnson field	2	1,841	8,280
Foster field	2	1,317	8,460
Tubb field	1	9,500	5,754
Other fields	6	2,812	19,948
Total	11		42,442

Northern West Texas

Oil wells: Slaughter field	15	15,213	75,529
Seminole field	2	1,107	10,560
Wasson field	7	5,694	36,339
Other fields	1	100	1,738
Total	25		124,166

Texas Panhandle

Oil wells: Carson County	2	127	6,224
Gray County	4	833	12,422
Hutchinson County	5	1,066	14,885
Wheeler County	1	97	2,455
Gas wells: Moore County	1	*17.4	3,107
Dry holes: Wheeler County	1		2,340
Total	14		41,433

*Million cu. ft.

Ward County Silurian Area

Another spot in southern West Texas, eastern Ward County, which was opened several months ago to deep production from the Silurian lime at the 7,000-ft. level, drew new attention as the second well encountered its first oil shows from the Silurian lime. The new prospective well is Gulf 6 Wristen, located in the C W½ E½ Section 18, Block 5, H.&T.C. Survey 1,406 ft. east of the discovery well. No. 6 Wristen cored Silurian lime pay from 7,022-80 ft., total depth, corrected to 7,098 ft. The bottom 58 ft. of hole showed 28 per cent recovery of cores bearing porous oil saturated lime. Top of the Silurian lime in this test was not released, therefore, no direct correlations, structurally, with the discovery well have yet been made. The 5½-in. casing has been set at 6,933 ft., reported to be 6 ft. below the unconfirmed top of the Silurian lime.

Oil Increases Found in Deepening

Olson Drilling Co. and Bryce McCandles 1 Crockett, Ellenburger lime discovery well 2 miles south and west of the Apco field of northern Pecos County, logged material increases in oil production by deepening from 4,518 to 4,526 ft. At the new depth it was allowed to flow into the pits for 4 hours, then gaged 977 bbl. of oil through 2½-in. tubing in 7 hours. The well was then shut in for 4 hours and again opened to flow 438 bbl. in 3 hours. With a total depth of 4,526 ft., granite was topped at 4,525½ ft. The discovery well was completed more than a year ago and has produced into Comanche Pipe Line Co.'s carrier connected to the well since January 20. The deepening operation was started only about 10 days ago. This is the only well drilled in the area and it is not definitely known yet whether it opened a new field or extends the Apco field to the south. The well is located in Section 5, Block 110, T.C. Survey.

SOUTHERN WEST TEXAS COMPLETIONS

(24-hour ratings based on last 3 hours of 6-hour gage)

Crane County

Tubb field: Gulf 3-A Tubb, 9,500 bbl. oil and 203 bbl. water, open casing, 6,000 gal. acid, 5,700-5,754 ft.

Ector County

Johnson field: M. J. Delaney 5-A Johnson, 1,234 bbl., open tubing, 270-qt. shot, 4,040-4,130 ft.
George Livermore 1-40 Johnson, 607 bbl., 1-in. choke, 265-qt. shot, 4,060-4,150 ft.
North Cowden field: Cities Service 16 Rhodes, 988 bbl., ¾-in. choke, 220-qt. shot, 4,040-4,150 ft.
Foster field: Forest Development 7-A Moss, 377 bbl., pumping, 480-qt. shot, 4,110-4,335 ft.
Fred Turner, Jr., 2-A Addis, 940 bbl., 1¼-in. choke, 1,250-qt. shot, 3,835-4,125 ft.
Goldsmith field: Gulf 345 Goldsmith, 330 bbl., open tubing, 115-qt. shot, 4,140-4,205 ft.
Jordan field: Texas Co. 27 Connell, 224 bbl., open tubing, 950-qt. shot, 3,532-3,692 ft.

Pecos County

Tobarg field: Cardinal Oil 5-K Tippett, 9 bbl., pumping, 30-qt. shot, 344-65 ft.
White & Baker field: Cardinal Oil 1-G White & Baker, 81 bbl., open tubing, 100-qt. shot, 2,000-20 ft.
Abell field: Phillips 1 Silverman, 1,180 bbl., 1-in. choke, 5,136-5,516 ft., top Simpson 4,740 ft., Tulip Creek 4,916 ft.

SOUTHERN WEST TEXAS WILDCAT REPORT

Crane County

Gulf 1-F University, SE SE Sec. 22, Blk. 31, University Sur., top Simpson 9,600 ft., T.D. 10,656 ft., waiting on 7-in. casing.
Eastham & Russell 1 McClintic, NE SE Sec. 210, Blk. F, C.C.S.D.&R.G.N.G. Sur., 7-in. 2,517 ft., 5½-in. 2,870 ft., show oil 2,882-87 ft., T.D. 3,170 ft., last report.

Crockett County

George T. Morris 1 Brock Hoover, SW SE Sec. 99, Blk. 1, I.&G.N. Sur., 2,000-ft. test, S.D. 1,503 ft.
R. H. Henderson 1 Couch, 467 ft. from N and 2,173 ft. from E lines Sec. 37, Blk GG, H.E.&W.T. Sur., drilling 160 ft.
Zay Kimberlain 1 Robbins, 417 ft. from S and E lines Sec. 4, Blk. W, G.C.&S.F. Sur., first report.

Ector County

Cities Service 1 F. C. Addis, SW SE Sec. 34, Blk 43, Twp. 2s, T.&P. Sur., drilled in new hole to 5,500 ft., P.B. 4,210 ft., pumped 15 bbl. oil and 30 bbl. water in 4 hr.
Forest Development Co. 1-C Edwards, SE SE SW Sec. 20, Blk 43, Twp. 3s, T.&P. Sur., top anhydrite 1,760 ft., drilling 4,307 ft.
M. D. O'Quinn 1 TXL, SE NW W½ Sec. 31, Blk. 44, Twp. 3s, T.&P. Sur., location.

Loving County

H. C. McAuley 1 E. Hall, SE Sec. 60, Blk. 7, W.N.&W. Sur., T.D. 4,820 ft., P.B. 4,803 ft., testing water shutoff.
Pinal Dome Oil 1 Michigan Oil fee, NW SW Sec. 15, Blk. 26-C, P.S.L. Sur., 5,300-ft. test, 10-in. 1,172 ft., drilling 3,420 ft.

Pecos County

O'Quinn 2 O'Neil, S½ Sec. 74, Blk. 10, H.&G.N. Sur., Ordovician test, drilling 1,050 ft.
Sinclair Prairie 1 Grove, Lot 9, Sec. 26, Blk. 9, H.&G.N. Sur., Ordovician test, drilling 3,268 ft.

Reagan County

Amerada 1-RA University, 1,980 ft. from N and 660 ft. from E lines of Sec. 3, Blk. 48, University Sur., Ellenburger lime test, 10¾-in. 650 ft., 7⅝-in. 2,225 ft., drilling 3,118 ft.
H. Schooler 1, R. A. Wolters, NE NE Sec. 51, G.C.&S.F. Sur., 8¼-in. 1,262 ft., S.D. 2,280 ft., show gas.

Reeves County

C. A. Kitsos 1 A. B. Buchard, SW Sec. 7, Blk 58, P.S.L. Sur., Delaware test, T.D. 748 ft., last report.
Roy Johnson 1 Perkins, Sec. 18, Blk. 7-C, P.S.L. Sur., S.D. 3,362 ft.

Schleicher County

Harold B. Opp 1 Jackson, Sec. 41, Blk. LL, T.C. Sur., T.D. 6,155 ft., fishing tools.

Sutton County

S. B. Roberts 1 George Allison, NW NE Sec. 44, Blk. K, G.H.&S.A. Sur., S.D. 740 ft., casing.
Domain 1 G. S. Allison, SW NE Sec. 91, Blk. 9, T.W. N.G. Sur., Ellenburger lime test, S.D. 1,098 ft.

Terrell County

Texas Consolidated Oil 1 Holmes, NE NE Sec. 14, Blk. 2-A, G.H.&S.A. Sur., 3,600-ft. test, 10-in. 1,100 ft., T.D. 1,275 ft., preparing to start up.
H. H. Sides 1 Rose, Sec. 15, Blk. 148, T.&St.L. Sur., T.D. 720 ft., last report.
L. M. Thomasson 3 Bates-Graham, 660 ft. from N and 2,490 ft. from W lines, Sec. 30, Blk. 1, I.&G.N. Sur., S.D. 950 ft.

Upton County

H. C. Wheeler 1 Kincaid, 2,173 ft. from N. 467 ft. from E lines, Sec. 3, G.C.&S.F. Sur., drilling 620 ft.
Pittman & Atkins 1 Fowler-Starnes, NW NE Sec. 89, G.C.&S.F. Sur., 3,500-ft. test., S.D. 420 ft.

Ward County

Fitzpatrick & Slack 1 Wilson, Sec. 145, Blk. 34, H.& T.C. Sur., 1½ mi. SE of discovery well. T.D. 5,034 ft., testing show gas and oil, 5½-in. at 4,845 ft.
Gulf 6 Wristen, 1,997 ft. from SE and 1,980 ft. from NE lines, Sec. 18, Blk. 7, H.&T.C. Sur., coring 7,060 ft.
Roeser & Pendleton, Inc., and Merry Bros. & Perini 1 Bird Hayes, 467 ft. from SE and SW lines Sec. 164, Blk. 34, H.&T.C. Sur., ½ mi. N of discovery gas well, top saturation in Delaware sand 5,089 ft., T.D. 5,396 ft., P.B. 5,130 ft., shot 5,085-5,130 ft., no results, prepare to quit as failure.
J. E. Fitzpatrick 1 T. B. Pruit, SW SW Sec. 23, Blk 1, W.&N.W. Sur., S.D. 140 ft.
Bells Wells 1 Wilson, NW SW Sec. 133, Blk. 34, H.& T.C. Sur., drilling 240 ft.

Winkler County

Stanolind and Westbrook & Thompson 1 Hendrick, NW NW NW Sec. 18, Blk. 26, P.S.L. Sur., drilling 3,575 ft.
Sam Weiner 2 Hailey, NW NE Sec. 7 Blk. 11-B, P.S.L. Sur., drilling 250 ft.

NORTHERN WEST TEXAS

A large farmout deal for the Slaughter field, together with the starting of a wildcat about 3½ miles north of production in the field, held the interest in the northern part of West Texas the week past.

One of the largest farmout deals in the Permian basin in several months was consummated between George Livermore, Inc., and the Texas Co. Livermore acquired 1,007 acres from the company in the Cochran County portion of the field, in Labors 24, 25 and W½ of 23, League 56, Oldham County School Lands Survey. One well was included in the transaction, 1 Boyd, center of Labor 25. It is understood Livermore purchased the producing well and obtained the farmout tracts for an overriding royalty. The new operator has staked 2 Boyd, 440 ft. from the north and east lines of H. T. Boyd tract in League 53.

New development was indicated for the 3-mile-west extension area of the vast Slaughter field when permit to drill was sought for an offset to the Atlantic 1 Dean well completed several weeks ago as a small producer. The permit was sought by Honolulu Oil as its 1-16 Dean, to be located 672 ft. from the south and 330 ft. from the east lines of Subdivision 16, League 90, Lipscomb County School Lands Survey. The extension was drilled on farmout acreage obtained from the Honolulu company.

Some 3½ miles north of production, O'Neal Drilling Co. was building roads to its wildcat location recently staked. It is to be located in the NE cor. of Labor 12, League 60, Martin County School Lands Survey.

New Andrews Wildcat

Location was announced at the close of the week for a new 5,000-ft. wildcat 5 miles northwest of Shafter Lake in northwestern Andrews County. It is

Mascho (Midland) 1 University, 1,980 ft. from the north and west lines of Section 11, Block 13, University Lands Survey. Mascho is preparing to drill below 8⅝-in. casing seat at 1,840 ft. in another Andrews County wildcat, 1 Fisher, Section 16, Block 36-A, P.S.L. Survey.

NORTHERN WEST TEXAS COMPLETIONS

(24-hour ratings based on last 3 hours of 6-hour gage)

Cochran County

Slaughter field: Atlantic 10 Boyd, 758 bbl., open tubing, 7,700 gal. acid, 4,955-5,055 ft.
Magnolia 3-J Mallett, 1,383 bbl., 3-in. casing outlet, 10,500 gal. acid, 4,990-5,055 ft.
Osage Drilling 2-A Moore, 640 bbl., open tubing, 11,500 gal. acid, 5,005-58 ft.
Osage Drilling 3-A Moore, 607 bbl., open tubing, 10,000 gal. acid, 5,020-61 ft.
Osage Drilling 4-A Moore, 723 bbl., 2-in. casing outlet, 9,000 gal. acid, 5,030-72 ft.
Osage Drilling 2-C Moore, 337 bbl., pumping, 7,000 gal. acid, 4,985-5,058 ft.

Gaines County

Seminole field: Amerada 4-A Mathews, 707 bbl., ½-in. choke, natural, 5,132-5,345 ft.
Magnolia 12-195 H. & J., 400 bbl., ½-in. choke, 6,000 gal. acid, 5,182-5,215 ft.

Hockley County

Slaughter field: Honolulu Oil 3-B Mallett, 1,099 bbl., open casing, 11,000 gal. acid, 4,951-5,025 ft.
Honolulu 3-A-4 Slaughter, 1,288 bbl., 2-in. casing outlet, 11,000 gal. acid, 4,900-90 ft.
Honolulu 11-B-24 Slaughter, 1,429 bbl., open casing, 11,000 gal. acid, 4,950-5,020 ft.
Magnolia 1-E Mallett, 713 bbl., open tubing, 10,500 gal. acid, 4,968-5,040 ft.
Mid-Continent 2-B Mallett, 1,341 bbl., open casing, 11,000 gal. acid, 4,970-5,028 ft.
S. W. Richardson 20-B Slaughter, 834 bbl., open casing, 10,000 gal. acid, 4,880-4,980 ft.
W. J. Richardson 2 Alleson, 557 bbl., open casing, 10,000 gal. acid, 4,880-4,980 ft.
Stanolind 12-A Slaughter, 1,217 bbl., 2-in. casing outlet, 5,000-87 ft.

Howard County

F.H.E. Oil 1-B Dennan, abandoned location.

Mitchell County

Dockery & Robbins field: F. W. Merrick 1-A Strain, 100 bbl., pumping, 420-qt. shot, 1,560-1,738 ft.

Terry County

Slaughter field: Honolulu Oil 4 Frazier, 2,287 bbl., open casing, 11,000 gal. acid, 4,940-5,020 ft.

Yoakum County

Wasson field: Aloco Oil Co. 7 Johnson, 518 bbl., ½-in. casing, 830-qt. shot, 4,957-5,272 ft.
Aloco 13-B Miller, 1,209 bbl., open tubing, 10,000 gal. acid, 4,934-5,219 ft.
Continental 8-A Stevens, 519 bbl., open tubing, 12,000 gal. acid, 4,940-,5,040 ft.
Don Danvers 3-B Willard, 1,225 bbl., open tubing, 10,000 gal. acid, 5,100-5,301 ft.
Denver Producing & Refining Co. 26 Whittenburg, 867 bbl., 2-in. casing outlet, 10,000 gal. acid, 4,830-5,132 ft.
Oil Development Co. 1-759 fee, 335 bbl., ⅝-in. choke, 11,000 gal. acid, 4,940-5,190 ft.
Shell 14-B Baumgart, 1,021 bbl., open tubing, 10,000 gal. acid, 4,940-5,185 ft.

NORTHERN WEST TEXAS WILDCAT REPORT

Andrews County

Phillips 1 University-Drews, NW NE Sec. 32, Blk. 10, University Lands Sur., drilling 7,174 ft.
Furham Pet. 1 Lockhart-Brown, Sec. 24, Blk. 42-A, P.S.L. Sur., T.D. 5,600 ft., P.B. 4,558 ft., treated 1,000 gal. acid, retreating 2,000 gal. acid, flowed 100 bbl fluid in 24 hr., 2 per cent b.s. and w., still testing.
Mascho Oil 1 Fisher, NE NE SE Sec. 16, Blk. 36-A, P.S.L. Sur., 8⅝-in. at 1,840 ft.

Borden County

M. L. Richards 1 W. R. Dunn, SW NE Sec. 307, Blk. 97, H.&T.C. Sur., 3,200-ft. test, rigged up and S.D.
B. C. Mann 1 Canning & Reynolds, NW NE Sec. 151, Blk. 25, H.&T.C. Sur., 3,000-ft. test, drilling 1,410 ft.

Cochran County

George Livermore 1 Wright, old T.D. 4,997 ft., S.D. 6,621 ft.
O'Neal Drilling Co. 1 Wright, NE cor. Labor 12, Lge. 60, Martin C.S.L. Sur., 3 mi. N of Dean area, first report.

Gaines County

Amon G. Carter 4-D Wasson, NW SE Sec. 50, Blk. AX, P.S.L. Sur., logged new pay about 6,610 ft., tight well, application filed to drill to 11,000 ft., S.D. 10,078 ft.

Hale County

Humble 1 Byrd, SE SE NE Sec. 17, Blk. K, E.T.R.R. Sur., 9,000-ft. test, surface casing 516 ft., drilling 3,200 ft.

Hockley County

Magnolia 1 M. Wilson, SW cor. Labor 8, Lge. 41, Maverick C.S.L. Sur., 1½ mi. N of production in Slaughter field, drilled broken oil shows 4,850-70 ft., top anhydrite 2,150 ft., top salt 2,240 ft., top solid lime 4,020 ft., T.D. 4,955 ft., tested 1,000 gal., preparing to retest through perf. at 4,909-29 ft., retreated 1,500 gal., pumped 19 bbl. oil in 5 hr., tested with 5,000 gal., gaged 133 bbl. daily on pump.

Lubbock County

A. L. Henderson 1 W. D. McMillan, SE NW Sec. 4, Blk. 2-D, H.E.&W.T. Sur., preparing to start work.

Martin County

Magnolia 1 N. D. Teague, NW NW Lab. 10, Lge. 260, Borden C.S.L. Sur., 5,500-ft. test, top anhydrite 1,930 ft., top brown lime 3,930 ft., solid lime 4,345 ft., drilling 7,255 ft.

Mitchell County

C. E. Casebolt 1 J. E. Franklin, NE NE NW Sec. 50, Blk. 27, T.&P. Sur., 15½-in. 170 ft., 12½-in. 256 ft., T.D. 2,470 ft., last report.
G. R. Anderson 1 Simpson, 2,310 ft. from S and 330 ft. from E lines, Sec. 65, Blk. 97, H.&T.C. Sur., first report.

Yoakum County

George Livermore 1 Ownby, NE NE NE Sec. 502, Blk. D, Gibson Sur., drilled broken saturation 5,237-85 ft., flowed several heads oil, treated 3,500 gal. acid, flowed 121 bbl. daily, tested 2,360,000 cu. ft. gas daily, T.D. 5,348 ft., completed for 98 bbl. in 3¾ hr.

TEXAS PANHANDLE

AMARILLO, Tex., Apr. 21.—New well completions for the past week in the Panhandle district showed a slight increase over the previous week. During the past 7-day period there were 14 companies listed, 12 for oil, 1 for gas and 1 failure. The week before there were 11 finals, all for oil. The aggregate initial daily potential of the new wells was 1,895 bbl.

TEXAS PANHANDLE COMPLETIONS

Carson County

Magnolia 101 fee (244), pumped 9 bbl. oil and 6 bbl water, 150-qt. shot, 4,070-3,115 ft.
Skelly Oil 118 Schaffer, 118 bbl., pumping, 295-qt. shot, 3,055-3,109 ft.

Gray County

Cities Service 9 Walberg, pumped 125 bbl. oil and 24 bbl. water, 110-qt. shot, 3,032-94 ft.
Gulf 12 Bowers "A," 74 bbl., pumping, natural, 2,954-3,170 ft.
Texwell Oil 1 Davidson, 74 bbl., pumping, 300-qt. shot, 3,007-70 ft.
Coronado Oil 1 Davidson, 360 bbl., pumping, 230-qt. shot, 3,032-88 ft.

Hutchinson County

Cree & Hoover 11 Harvey, 120 bbl., pumping, 165-qt. shot, 3,995-3,044 ft.
Gulf 102 Dial, 134 bbl., pumping, 220-qt. shot, 2,930-65 ft.
Midstates Oil 35 Whittenburg "A," 389 bbl., pumping, 710-qt. shot, 2,783-2,861 ft.
Phillips 52 Cockrell, 149 bbl., pumping, 325-qt. shot, 2,945-3,013 ft.
Phillips 15 Jordan, 274 bbl., pumping, 340-qt. shot, 2,925-3,002 ft.

Moore County

Phillips 1 Winter, 17,400,000 cu. ft. gas, natural, 2,746-3,107 ft.

(Continued on Page 144)

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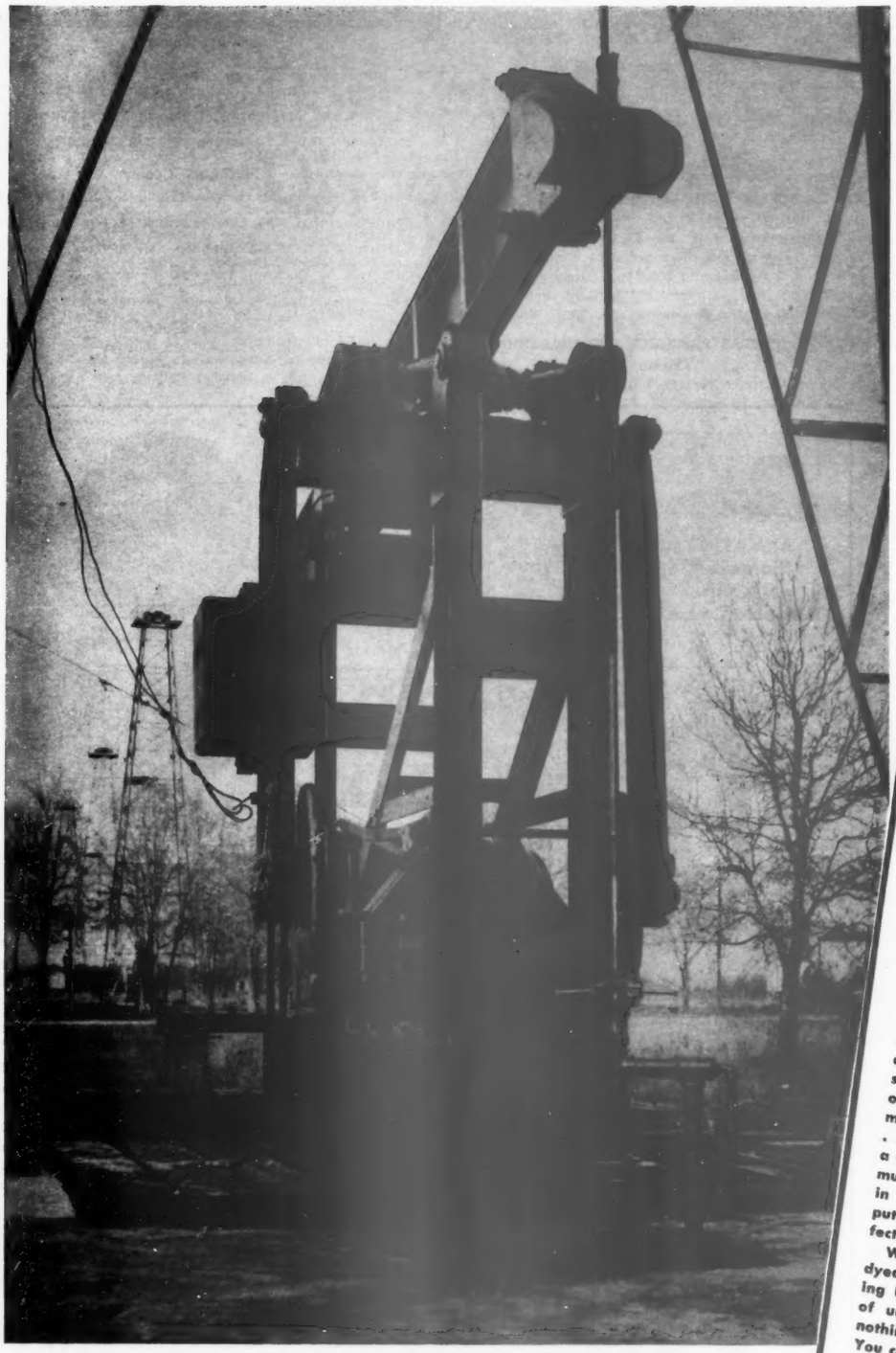

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PARKERSBURG DEPENDABLE ENGINEERED PUMPERS

Mississippi Lime Discovery in Young Co. Starts Lease Play

By R. MARNE SANFORD

WICHITA FALLS, Tex., Apr. 21.—Declared one of the most important discoveries in Young County in several years is the new Mississippian lime level opened to production the past week 3 miles south of Olney. The opening of this field establishes a definite trend of Mississippian lime production, even though some of the links in the trend are one-well areas. It extends northward from the Stribling field in Stephens County, through several spots in Young County, to the recently opened Mississippian lime area just southwest of the Hull-Silk field in Archer County.

The new Young County discovery of the week was L. T. (Bobby) Burns 1-A Larrimore, Block 150, T.E.&L. Survey, just north of the small town of Orth in the northern part of the county. The well drilled Mississippian lime from 4,902 to 4,927 ft. and cemented 7-in. casing for tests 10 days ago. When plug was drilled late this week the well blew in at the estimated rate of 75 bbl. of oil per hour. It had been drilled in with tubing and flowed a solid stream of oil while cleaning itself.

The preliminary showings of the well, previous to the drilling of the plug, had set off an almost unprecedented leasing program for the area. It is reported that approximately 30,000 acres have been taken in leases, with buyers including Shell and Magnolia of the major companies, and innumerable independent operators. Prices are ranging from $40 to $60 per acre for tracts from 2 to 3 miles from the discovery.

Despite the fact that the intercounty trend is over so broad an area and in a north-south direction, the local leasing trend tends to be in a northwest-southeast direction. Most leasing is being done between the well which is 3½ miles south of Olney and the old Fain & McGaha 1 Dashe, abandoned 3 years ago about 6 miles west of Olney.

Montague Strike Swabs

Now believed considerably below previous expectations, the latest strike in Montague County was being swabbed at the close of the week, the well failing to kick off and flow when it was washed in. The discovery is Benson & Benson 1 Seay, J. P. Ownsby Survey, wildcat 2 miles southeast of the Ringgold field and about 6 miles south and slightly east of the town of Ringgold. Early swabbing tests had shown mud and drilling water, with only about 10 per cent being live oil. On a 64-minute drill-stem test prior to cementing casing the well had shown gas in 3 minutes and started flowing 31-gravity oil in 7 minutes. The 7-in. casing is cemented at 5,748 ft., on top of the conglomerate pay zone from 5,752-62 ft.

Clay Discovery Gets Final Gage

Completion gage was reported at the close of the week for Clay County's new Mississippian lime discovery, Shell 1-A Coleman, Section 24, Calhoun County School Lands Survey, 8 miles southeast of Henrietta, which has been in the completion stages for several weeks.

On a 3-hour test the well flowed 138 bbl. of 47-gravity oil through ¾-in. choke. Shut-in pressures were 1,470 lb. on the casing and 1,250 lb. on the tubing. On a previous gage the well made 408 bbl. of oil and 5 bbl. of salt water in 12 hours through various sized chokes. Production is from a series of casing perforations between 6,158 and 6,283 ft. in lime pay topped at 6,130 ft. The total depth prior to plugging back was 6,838 ft.

SUMMARY OF COMPLETIONS

North Texas

	No.	Bbl.	Footage
Oil wells: Archer field	5	317	6,160
Clay field	3	146	3,409
Voth field	2	165	2,614
K.M.A. field	2	285	4,990
Wichita field	3	52	2,938
Young field	2	842	7,979
Wildcats	2	110	8,748
Other fields	11	2,974	32,543
Dry holes: Fields	17	.....	25,149
Wildcats	4	.....	15,125
Total	51	.....	109,655

West Central Texas

Oil wells: Lewis field	3	455	5,943
Other fields	2	132	3,529
Wildcats	1	5	896
Gas wells: Fields	2	*7.1	3,767
Dry holes: Fields	3	.....	7,128
Wildcats	4	.....	5,497
Total	15	.....	26,760

*Million cu. ft.

NORTH TEXAS COMPLETIONS

Archer County

Hull-Silk field: George Widner 1 Anderson, dry at 571 ft.
Helmerich & Payne 5 Moss, dry at 4,853 ft.
Helmerich & Payne 7 Shephard, 63 bbl. an hour, 500 gal. acid, est. 450 bbl. daily, top Caddo 4,565 ft., saturation 4,615-44 ft.
Bridwell Oil 8 Oil Investment "C", dry at 1,476 ft.
Archer field: John L. Webb 1 Jehlik, 75 bbl. daily, pumping and flowing, 1,116-20 ft.
John L. Webb 3 Montgomery, 100 bbl. daily, flowing, 1,107-09 ft.
L. T. Burns 2 Blewitt, 54 bbl. daily, pumping, 1,438-50 ft.
Rathke Oil 1 Pastusek, 4 bbl. daily, 1,445-48 ft.
Petroleum Producers 5 King, 84 bbl. daily, pumping, 1,222-33 ft.
White & Duncan 2 Snyder, dry at 751 ft.
Wildcats: Gant & Feagin 1 Hunter & Hancock, Sec. 7, Blk. 1, H.&T.C. Sur., top Caddo 5,133 ft., Mississippian 5,315 ft., Ellenburger 5,370 ft., dry at 5,391 ft.
King Oil 1 Taylor, Sec. 13, Lot 1, A.T.N.C.L. Sur., top Caddo 4,682 ft., Ellenburger 4,963 ft., 100 bbl., 500 gal. acid, 4,652-97 ft.
Magnolia 1 Hayter, Sec. 2415, T.E.&L. Sur., top Palo Pinto, 3,067 ft., Caddo 4,660 ft., Marble Falls 4,765 ft., Mississippian 5,210 ft., Ellenburger 5,396 ft., dry at 5,416 ft.
G. J. School 1 Hamilton, Blk. 5, B.B.B.&C. Sur., Abst. 46, dry at T.D. 1,253 ft.

Baylor County

Seymour field: British American 2 Green "K", 73 bbl. daily, pumping, 2,500 gal. acid, 3,032-35 ft.
Wildcat: Baldwin & Reed 1 Robertson C.S.L., located Robertson C.S.L. Sur., Abst. 280, old T.D. 2,994 ft., deepened to 3,065 ft., dry.

Clay County

Clay field: Akin, Dimock & Costley 4 McInnis "C", 25 bbl. daily, pumping, natural, 1,234-36, 1,238-39, 1,241-44, and 1,249-53 ft.
Sussex Oil 21 Glasgow, 50 bbl. daily, pumping, natural, 1,070-80 ft.
Sussex Oil 22 Glasgow, 71 bbl. daily, pumping, natural, 1,072-76 ft.
George Golden 4 First Texas Joint Stock Land Bank, dry at 462 ft.
Gorman & Norwood 4 Taylor, dry at 1,350 ft.
Johnson & Kouri 3 Taylor, dry at 1,173 ft.
Stanford 1 Edrington, dry at 1,239 ft.
Antelope field: Shell 10 Henderson, 219 bbl. in 8 hr., 2-in. casing outlet, est. 500 bbl. daily, natural flow, 3,159-3,216 ft.

Cooke County

Walnut Bend field: Sinclair Prairie 8 Ramsey, 96 bbl. in 3 hr., natural, est. 500 bbl. daily, 3,818-45 ft.
Voth field: C. J. Bohner 3 Sicking, 41 bbl. in 7 hr., est. 100 bbl. daily, 1,301-06 ft.
C. J. Bohner 5 Sicking, 16 bbl. in 4 hr., est. 65 bbl. daily, 1,300-08 ft.

Jack County

Bryson field: Maracaibo Oil 4 Owen, 149 bbl. daily, ½-in. choke, 15-qt. shot, 3,078-3,105 ft.
Mathis field: Irion Worsham 1 Huckabay, 90 bbl. in 8 hr., open tubing, natural, est. 200 bbl. daily, 2,910-34 ft.
Steed & Cooper 1 Leach, dry at 3,050 ft.

Montague County

Nocona field: Pure Oil 8 Maddox "B", 24 bbl. daily, pumping, natural, 862-910 ft.
Benton & Holmes field: Ross Drilling Co. 2 Custers, 35 bbl. in 4 hr., 7/64-in. choke, est. 150 bbl. daily, 3,083-3,102 ft., P.B. from 3,775 ft., total depth.
Bonita field: Sinclair Prairie 3 Admire, 176 bbl. in 3 hr., natural, est. 850 bbl. daily, 5,424-29 ft.

Throckmorton County

Throckmorton field: Combined Oil 3 Housley, 25 bbl. daily, pumping, 653-75 ft.

Wichita County

K.M.A. field: W. H. Hammon 4-B Hammon, 10 bbl. daily, pumping, 603-14 ft.
Golding & Cochran 11 Preston, 67 bbl. in 3 hr., ¾-in. choke, 275 bbl. daily est., 4,350-76 ft.
Consolidated Oil 2 Barnes, top Mississippian 4,593 ft., dry at 4,613 ft.
Wichita field: Dudley & Fisher 1 Hardin, dry at 1,652 ft.
Magnolia 30 Red River Lands, 2 bbl. daily, pumping, 15-qt. shot, 795-807 ft.
Staley Oil 3 Glass, 45 bbl. daily, pumping, 1,309-15 ft.
McElreath & Suggett 2 Turner, dry at 1,237 ft.
Fred B. Wedmeyer 7 Powell, 5 bbl. daily, pumping, 807-11 and 814-16 ft.
King Oil 1 Burnett, top Ellenburger 3,790 ft., dry at 3,809 ft.

Young County

Olney field: Kleiner & H.-Y. Oil 4 Prideaux, dry at 583 ft.
Chambers & Hanks 2 Norton, dry at 908 ft.
Kimmell Lee & Co. 7 Campbell "B", 53 bbl. daily, pumping, 968-75 ft.
Willis & Stewart 3 Stewart, dry at 860 ft.
C. E. Rodgers 1 Bloodworth, dry at 815 ft.
Echols & Fentress 1 Baker, dry at 600 ft.
Wildcat: Frank Buttram 1 Holman, J. M. McRodgers Sur., Abst. 1878, 10 bbl. daily, pumping, natural, 3,955-4,006 ft., P.B. from 4,050 ft.
Young field: Henry Zweifel 1 Jernigan, 306 bbl. in 14 hr., 350 bbl. daily est., 1,500 gal. acid, 4,177-4,230 ft.
Lupton & McLester 7 Brown, 492 bbl. daily, 3,719-49 ft.

NORTH TEXAS WILDCAT REPORT

Archer County

W. B. Hamilton 22 Cartwright, 660 ft. from W and S lines, James Webb Sur., Abst. 664, T.D. 5,211 ft., P.B. 5,164 ft., 60-qt. shot 5,149-61 ft., swabbing and cleaning out, est. 30 bbl. oily daily, S.D. 5,211 ft.
W. B. Hamilton 1 C. E. Graham, C SE part of Gibenrath Sur., Abst. 136, 2,000-ft. test, S.D. 1,975 ft., prepare to drill deeper.
Deep Oil Development and Jim Jennings 1 Jentch, E 121 acres of W½ John Scott Sur., Abst. 915, spudding.
J. R. Jones 1 Jones, 825 ft. from E and 150 ft. from S lines Sec. 103, Jefferson C.S.L. Sur., drilling 996 ft.
United Prod. 1 Beardon, 900 ft. from W and 1,731 ft. from N lines J. Riley Sur., Abst. 364, drilling 770 ft.
W. A. Wise 1 Abercrombie, 2,100 ft. from S and 117 ft. from W lines Sec. 152, J. W. Harris Subd., drilling 1,016 ft.

Baylor County

Amerada 1 Upshur C.S.L., 6,175 ft. from N and 11,250 ft. from E lines, Lot 58, Upshur C.S.L. Sur., Abst. 557, 10-in. 174 ft., drilling 4,724 ft.

Clay County

Gulf 1 C. W. Scaling, NW NW Sec. 31, T.&N.O. Sur., Abst. 685, 6,000-ft. test, show oil 5,596-5,617 ft., show oil and water, S.D. at T.D. 5,617 ft.
L. T. Burns 1 Southerland, NE cor. of 100 acres of Sec. 63, J. H. Belcher Sur., 5,500-ft. test, top Caddo 5,322 ft., T.D. 5,386 ft., P.B. 4,432 ft., testing.
L. T. Burns 1 Fred Wines, 593 ft. from N and 476 ft. from E lines of Sec. 1, Halsell subd. 1, 5,500-ft. test, rigged up and S.D.
Shell 1 Coleman, Sec. 24, Calhoun C.S.L. Sur., show oil in Mississippian lime, top Simpson 6,455 ft., Ellenburger 6,727 ft., T.D. 6,837 ft., preparing to complete from Mississippian lime.
Bridwell Oil 2 Meyers, 3,350 ft. from W and 2,185 ft. from N lines Thompson Sur., Abst. 444, drilling at 2,012 ft., 6,000-ft. test.
C. U. Beasley 1 Campbell, 150 ft. from NW line and 1,150 ft. from N cor. Sec. 140, Byers Brothers subd., drilling 720 ft.

Cooke County

Gill & Sitherspoon 5 Wilson, 1,950 ft. from W and 3,500 ft. from N lines, Ehen Reed Sur., Abst. 849, 1,100-ft. test, hard sand 834-37 ft., tested 5 bbl. daily, to deepen.

Denton County

C. H. Gannon 1 Aetna Life Ins. Co., 412 ft. from S and 212 ft. from W lines S. Yoakum Sur., Abst. 1439, 1,300-ft. test, location.

Hood County

Aztec Oil 1 Gallagher, SW SE Robert Alway Sur., 3,000-ft. test, S.D. orders 2,200 ft.

Jack County

Continental 1 Robertson, M. J. Swan Sur., Abst 1659, top Ordovician 5,380 ft., T.D. 5,577 ft., P.B. 5,514 ft. swabbing est. 50 bbl. oil per 7 hr. but will not flow, still testing, installing gas lift.
R. J. Conkling 1 Hoffle, A. James Sur., Abst. 318, 3 mi. S of Antelope, 3,500-ft. test, T.D. 3,128 ft., S.D. 3,165 ft., repairs.
K. N. Davis 1 Jones, NW cor. E½ Sec. 2555, T.E.&L. Sur., 1 mi. SE Perrin, 2,500-ft. test, moving in rig.
Harper-McClintock 1 Kinder, 1,400 ft. from E and 467 ft. from N lines, Sec. 2667, T.E.&L. Sur., 6⅝-in. casing 1,640 ft., T.D. 2,105 ft., last report.
O. J. Perrin 1 Brumbelow, 1,045 ft. from S and 720 ft. from E lines, H. C. Ayers Sur., Abst. 4, S.D. 3,505 ft. after electrical survey.
Reed & Croft 1 Richards, 467 ft. from W and 1,200 ft. from N lines of C. Gates Sur., Abst. 237, 3,500-ft. test, digging pits.
C. H. Peterson 1 Hoefle, SE cor. John W. Barrett Sur.,

Abst. 48, 500-ft. test, 8-in. at 228 ft., 7-in. at 325 ft., show oil 340-42 ft., 438-44 ft., T.D. 444 ft.
Adam Grafe 1 H. R. Bloodworth, 6,986 ft. from S and 3,244 ft. from N lines, William McDonald Sur., Abst. 180, 3,500-ft test, moved in material and S.D.
I. B. Worthington (was R. S. Lake) 1 Simpson, 1,500 ft. from S and 1,000 ft. from W lines, J. W. Abbey Sur., Abst. 11, old well drilled deeper, old T.D. 3,152 ft.
Alma Oil 1 Dees, 2,956 ft. from W and 466 ft. from S lines, George Taylor Sur., Abst. 877, location.

Montague County

Seitz, Comegys & Seitz 1 Ritchey, NE cor. S½ Sec. 60, Belcher subd., 6,200-ft. test, 10¾-in. 826 ft., top Caddo 5,445 ft., drilling 5,650 ft.
Redman Brothers 1 Hardy, 225 ft. from N and E lines of 41-acre tract in Fielding Secrest Sur., Abst. 665, 2,500-ft. test, pipe free, S.D. 2,447 ft.
Benson & Benson 1 Seay, SE SE SE Sec. 31, Blk. 4, H.&T.C. Sur., 4,000-ft. test, 10-in. 500 ft., top Caddo 5,662 ft., show oil 5,752-62 ft., drilling plug.
Sinclair Prairie 1 Clingingsmith, 467 ft. from S and W lines of Sec. 149, Jose Olabarri Sur., Abst. 579, 6,000-ft. test, 9⅝-in. at 749 ft., top Strawn 3,130 ft., top Caddo 5,662 ft., T.D. 5,676 ft., testing.

Throckmorton County

Rathke Oil 1 Swagerty, 495 ft. from N and 746 ft. from E lines of SW Sec. 258, B.B.B.&C. Sur., 5,000-ft. cable-tool test, top Palo Pinto 2,830 ft., drilling 3,315 ft.

Wilbarger County

O. H. Hammer 1 A. V. Shelton, NW NW Sec. 16, Blk. 11, H.&T.C. Sur., 4,500-ft. test, S.D. 524 ft., corrected.
W. B. Omohundro 1 Vaughn, 2,330 ft from E and 330 ft. from N lines, S½ Sec. 9, Blk 1-C, H.&T.C. Sur., 5,000-ft. test, drilling 4,217 ft.
Wilcox Oil & Gas 1 Waggoner, 330 ft. from S and E lines, SW Sec. 43, Blk. 2, H.&T.C. Sur., 5,000-ft. test, derrick.

Young County

Ben H. Rankin 1 Mary Logan, SW part Blk. 2, J. W. Doty Sur., 8 mi. NE Graham, 2 mi. W Nelson field, tested 1,000,000 cu. ft. gas from 4,288-95 ft., top Marble Falls 4,470 ft., S.D. 4,475 ft.
E. L. Orr 1 Laird, 150 ft. from S and 1,450 ft. from W lines, Sec. 1393, T.E.&L. Sur., 925-ft. test, drilling 925 ft.

WEST CENTRAL TEXAS

FORT WORTH, Tex., Apr. 21.—Jones County held the attention of the West Central Texas district the past week as official gage was reported on one new discovery and testing had started on another prospective strike.

JONES COUNTY.—Harry Hines et al 1 A. M. Wimberly, discovery 12 miles northwest of Abilene and between the Stith and the Akard fields of southern Jones County, was completed in the lower lime section at a corrected depth of 2,538-53 ft. The well flowed 216 bbl. of oil daily through ½-in. choke. It had been treated with 1,000 gal. of acid. Location is 330 ft. out of the southwest corner of Lot 87, Godwin subdivision of the De Witt County School Lands Survey.

About a mile northwest of the Lewis field in Jones County the S. B. Roberts Co. (recently acquired from Fain-McGaha Oil Corp.) 1 O. J. Cooper, Section 29, Block 15, T.&P. Survey, was testing for commercial completion. The test drilled saturation in the Caddo lime several weeks ago, however, completion of the well has proven somewhat doubtful. Bottomed at 4,919 ft. in lime topped at 4,819 ft., the hole filled 150 ft. with mud carrying a rainbow of oil after plug was drilled from casing at 4,827 ft. Little gas was showing, however, swabbing would not appreciably lower the fluid level in the hole.

FISHER COUNTY.—In Fisher County a once-hailed discovery well is nearing its contract depth as drilling progresses below 4,800 ft. It is Al Landers and H. J. Eisele, Dallas operators, 1 Mose Newman, wildcat in the southern part of the county and in Section 9, Block 20, T.&P. Survey. Contract depth is 5,000 ft.

New Wildcat Tests

EASTLAND COUNTY.—Sabens & West of Tyler, Tex., have staked location for a 3,500-ft. wildcat in Eastland County and 7 miles northwest of Cisco. It is 1½ miles northeast of Nimrod and will be 1 W. H. Hall, on the center of the east line of the NE¼ Section 100, Block 3, H.&T.C. Survey.

SHACKELFORD COUNTY.—Near the Shackelford and Stephens county line and just ¾ mile northwest of the Compton-Loving field a new 4,000-ft. wildcat location has been staked. It is Mel S. Engleright, Fort Worth, 1 Walls Pasture Co., located 660 ft. from the north and east lines of Section 13, Orphan Asylum lands.

WEST CENTRAL TEXAS COMPLETIONS

Brown County

Wildcat: Manning, Richburg & Johnson 3 Charter, Sec. 19, Blk. 2, B.B.B.&C. Sur., dry at 432 ft.
Robert Richmond 1 Petross, Sec. 7, H.&T.B. Sur., dry at 812 ft.
Brownwood gas field: Hightower Oil & Refg. 1-B Buckner Orphan Home, 76 bbl. oil in 6 hr., with 4,000,000 cu. ft. gas daily, 1,419-1,533 ft.
A. H. Richardson 1 Davis, dry at 600 ft.

Coleman County

Santa Anna field: Lone Star 2 Baker, top Caddo 1,649 ft., 3,154,000 cu. ft. gas daily, 2,162-2,234 ft., 2,000 gal. acid.

Eastland County

Wildcat: Douglas Tomlinson, Jr. 1 Bennett, 5 bbl. daily, pumping, 894-96 ft., Sec. 6, Blk. 2, H.&T.C. Sur.

Hamilton County

Wildcat: Wallace & Vickers 1 Lund, P. J. Bailey Sur., No. 51, top Marble Falls 3,230 ft., dry at 3,453 ft.

Jones County

Avoca field: R. C. Lipscomb 1 Sarlson, dry at 3,264 ft.
North Avoca field: West and Ungren & Frazier 1 Carlton, dry at 3,264 ft.
Higgs field: George Callihan 5 Higgs, 25 bbl. daily, 40-gt. shot, 1,826-40 ft.
Lewis field: Roeser & Pendleton 1 Hollis, 210 bbl. in 17 hr., 2,019-22 ft.
Butler & Horne and U. L. Miller 1 Merry, 30 bbl. in 4 hr., pumping, 2,022-27 ft.
Falls Refining Co. 6 Robinson, 55 bbl. daily, 1,000 gal. acid, 1,886-94 ft.

McCulloch County

Wildcat: W. J. Dillard 1 Garrett, F. Schneider Sur. 934, dry at 800 ft.

Shackelford County

Cook field: Roeser & Pendleton 1-A-117 Cook, 107 bbl. daily, with 36 bbl. water, pumping, 1684-89 ft.

WEST CENTRAL TEXAS WILDCAT REPORT

Brown County

C. G. Goss 1 Crownover, 467 ft. from S and E lines Sec. 26, B.B.B.&C. Sur., 3,000-ft. test, reaming 1,480 ft.
Central Tex. Gas 1 E. S. Smith, NE cor. of W 199 acres of S 291 acres of Wm. Guyman Sur. 86, 2,000-ft. test, drilling 1,868 ft.
H. P. Evans 1 Starkey, SE SE Sec. 3, H. C. Walker Sur., 1,200-ft. test, S.D. 150 ft.

Callahan County

W. D. Austin 1 I. N. Jackson, 150 ft. from N and W lines, Sec. 2, C.&M. Sur., reaming from 916 to 982 ft.
Yates & York 1 Huestis, NE NW Sec. 3198, T.E.&L. Sur., 600-ft. test, spudded and shut down.
Slay & Hyer 1 Hennessy, NE SW Sec. 83, B.B.B.&C. Sur., 1,800-ft. test, drilling 1,050 ft.
Kleiner & Acers 1 Snyder, 150 ft. from S and W lines SE¼ Sec. 3, T.&N.O. Sur., 1,200-ft. test, location.

(Continued on Page 138)

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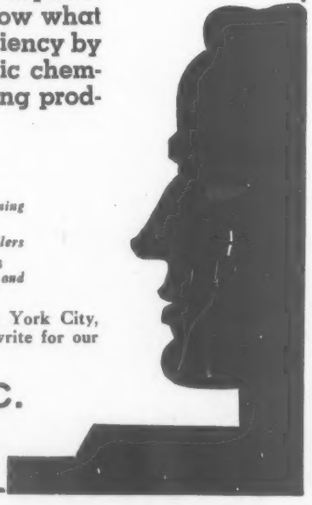

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By
STAFF CORRESPONDENT

White and Shelby County Pool Openers Are Reported

MATTOON, Ill., Apr. 21.—Illinois oil-field activity was featured last week by the discovery of new oil pools in both White and Shelby counties and the beginning of the long-rumored Devonian development program in the Louden pool of Fayette County.

Developments at a White County wildcat 12 miles south of Carmi last week indicated that the county's seventeenth pool may be opened in the near future. Cherry & Kidd 1 Karch, SW NW NE 24-6s-10e, Emma Township, had recovered promising saturation in three formations by the end of the week. Casing was set to 2,834 ft. to test saturation in the Aux Vases at 2,841-59 ft. Special alloy casing was also set opposite shows in the Cypress at 2,554 ft. and in the Palestine at 1,998 ft. The test, 5 miles from nearest production, was drilled on a 320-acre tract. About 800 acres surrounding the well also are owned by Karch while most of the leases in the area are owned by Cherry & Kidd and the Skelly Oil Co.

SHELBY COUNTY.—Shelby County's pool opener, Hinkle & Sloan 1 Harrison, NE SE 12-10n-2e, Cold Springs Township, was reported swabbing oil at the rate of 60 bbl. a day following a 10-qt. shot at 1,730-33 ft. late last week. Production is from the Aux Vases sand at 1,725-34 ft. The well is also making a slight amount of water. The 1 Harrison is far removed from other production and is expected to spur an immediate drilling campaign in the area. The only production in Shelby County at the present time is from the three wells in the Stewardson pool.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Benton	4	1,450	8,560
Dahlgren	3	905	10,008
East Calvin	13	2,092	35,927
Hoodville	3	211	9,040
Inman	2	605	4,146
Mount Carmel	5	770	11,109
N. New Harmony	5	587	14,408
Other pools	17	1,436	40,283
Gas wells: Russellville	1	*3.0	804
Dry holes: Fields†	9	.....	25,078
Wildcats	11	.....	16,675
Total	73	.....	176,038
Gas-input wells	1	.....	1,601
Recompletions	5	528	.....

*Million cu. ft.
†Omaha 1, Hoodville 2, Tonti 1, Noble 1, Mount Carmel 3, South New Harmony 1.

Devonian Program Launched in Louden Field

The Carter Oil Co. again aroused interest in the possibilities of Devonian production in the Louden field about 2 weeks ago when representatives of the company announced that a second stratigraphic test was under way on the Elsie McClain lease in 26-8n-3e about a mile south of the first test drilled last November. At that time it was announced that no information regarding the progress of the test would be available since it was being made for the purpose of obtaining structural information and not with any expectation of producing commercially. Some observers expressed the belief that the company was attempting to define the productive boundaries of the deeper formation before starting a development program.

Although they could not be confirmed, rumors have persisted constantly during the past several weeks that other companies and independents holding acreage in the Louden field were planning to test the Devonian. Last week, however, these rumors became an actuality when Whisenant & Trenchard began drilling at 25-D Henry Lilly, E½ NW SE 16-8n-3e. The 25-D Henry Lilly, in the heart of the Louden pool, is considered one of the most important tests ever drilled in the county. It will be drilled to the Devonian, a formation not now productive in the field.

The discovery well of the Louden field, Carter 1 Mary Miller, was a small Devonian producer, but the company plugged it back to the Benoist, the formation from which it still is producing. There have been a few Devonian tests in unproved areas of the field, but all of them were abandoned.

BENTON POOL.—A mile south of the Benton pool of Franklin County, W. O. Morgan 1 J. P. Miner, NW NW NE 36-6s-2e, was reported flowing between 40 and 45 bbl. of oil an hour, despite the fact that tools still were in the hole. The 1 Miner, largest well ever drilled in the county, is producing from the Tar Springs topped at 2,114 ft. The well was being cleaned out at the end of the week following a shot of nitro. An offset has been started on the west by the Shell Oil Co. and on the north by E. S. Adkins.

ILLINOIS COMPLETIONS

Bond County

Wildcat: Woodruff 1 Harwood, NE NE SE 36-7n-4w, dry, T.D. 800 ft.

Clark County

Wildcat: Neal Stewart 1 Wallis, NW SW SE 8-10n-14w, dry, T.D. 640 ft.

Clinton County

Centralia pool: Shell 23 E. C. Criley, NW NE NW 2-1n-1w, pumped 48 bbl. oil and 6 bbl. water, 8-qt. shot 1,362-67 ft., Benoist 1,353 ft., pay 1,353-67 ft., T.D. 1,367 ft.

Wildcat: Campbell et al 1 Sarah Brown, NE SE NE 21-3n-2w, dry, Glen Dean 940 ft., Waltersburg 1,121 ft., Benoist 1,233 ft., Ste. Genevieve 1,327 ft., Rosiclare 1,345 ft., Fredonia 1,357 ft., T.D. 1,426 ft.

B. E. Martin 1 Brinkmann, SW SW SW SE 9-1n-2w, dry, Ste. Genevieve 1,427 ft., McClosky 1,442 ft., St. Louis 1,530 ft., H.F.W. 1,155 ft., T.D. 1,558 ft.

Union P. L. 1 E. Twenhafel, SE SW SE 8-1n-2w, dry, Glen Dean 952 ft., Hardinsburg 970 ft., Cypress 1,118 ft., Weiler 1,152 ft., Paint Creek 1,198 ft., Benoist 1,261 ft., T.D. 1,274 ft.

Fayette County

Louden pool: Carter 10-4 J. W. Lancaster, SE NW NE 10-8n-3e, gas-input well, Glen Dean 1,330 ft., Cypress 1,462 ft., Weiler 1,468-1,517 ft., Paint Creek stray 1,569-84 ft., T.D. 1,601 ft.

Carter 3 Miller, NW SW SE 1-8n-3e, swabbed 120 bbl., 20-qt. shot 1,482-87 ft., Weiler 1,470-85 ft., T.D. 1,487 ft.

Franklin County

Benton pool: E. S. Adkins 6 Orient, NE SE SW 24-6s-2e, pumped 300 bbl., 25-qt. shot 2,123-37 ft., Tar Springs 2,105 ft., T.D. 2,137 ft.

Wegner 3 C. W. & F. Coal, NE SW SW 24-6s-2e, pumped 435 bbl., 25-qt. shot 2,095-2,120 ft., Tar Springs 2,080 ft., T.D. 2,120 ft.

E. S. Adkins 1 Simpson, NE NE NW 25-6s-2e, pumped 384 bbl., 25-qt. shot 2,126-41 ft., Tar Springs 2,106 ft., T.D. 2,141 ft.

Shell 3 W. E. Doty, SE NW NE 25-6s-2e, pumped 331 bbl., 15-qt. shot 2,145-55 ft., Tar Springs 2,123-62 ft., T.D. 2,162 ft.

Gallatin County

Inman pool: R. Halbert 1 Curry, SW SW NW 15-8s-10e, pumped 240 bbl., 30-qt. shot 2,062,72 ft., Tar Springs 2,058-72 ft., T.D. 2,072 ft.

Egyptian T. & T. 3 fee, NE NE SE 16-8s-10e, pumped 365 bbl., 7-qt. shot on bottom, pay 2,064 ft., Tar Springs 2,047 ft., T.D. 2,074 ft.

Farrell et al 2 Frey, S½ SW NE 19-8s-10e, location abandoned.

Omaha pool: Carter 1 L. Rister, NE SW NW 4-8s-8e, dry, base Pennsylvanian 1,380 ft., Kincaid 1,508 ft., Clore 1,642 ft., Palestine 1,688-98 ft., Benoist 2,558 ft., Aux Vases 2,791 ft., Ste. Genevieve 2,853 ft., Rosiclare 2,857 ft., Fredonia 2,865 ft., McClosky 2,922-24 ft., T.D. 3,048 ft.

Hamilton County

Hoodville pool: Texas 1 J. Turner, NW NE NE 10-6s-6e, dry, Menard 2,228 ft., Vienna 2,365 ft., Tar Springs 2,387 ft., Glen Dean 2,455 ft., Hardinsburg 2,525 ft., Golconda 2,597 ft., Barlow 2,700 ft., Cypress 2,715 ft., Cypress sand 2,735-50 ft., Paint Creek 2,815 ft., Benoist 2,969 ft., Aux Vases 3,068 ft., Ste. Genevieve 3,094 ft., T.D. 3,229 ft.

Texas 2 N. Hood, NW NE SW 3-6s-6e, pumped 190 bbl. from Aux Vases and Benoist, 10-qt. shot 2,967-74 ft., Benoist 2,956-79 ft., Aux Vases 3,060 ft., T.D. 3,070 ft.

Texas 1 C. A. Flint, NE SW SW 3-6s-6e, dry, Menard 2,255 ft., Glen Dean 2,485 ft., Barlow 2,725 ft., Cypress 2,745 ft., Cypress sand 2,770 ft., Benoist 2,964-72 ft., Aux Vases 3,044-79 ft., Ste. Genevieve 3,081 ft., Rosiclare 3,155 ft., Fredonia 3,179 ft., T.D. 3,187 ft.

Parker Drlg. 1 Trobaugh, NE SE SW 27-5s-6e, pumped 11 bbl. oil and 8 bbl. water, 5-qt. shot 2,961-64 ft., Benoist 2,953-78 ft., T.D. 2,971 ft., P.B. 2,964 ft.

St. Clair Wyoming 19 M. E. Friel-B, SW NE SW 34-5s-6e, pumped 1 bbl. oil and 48 bbl. water, 10-qt. shot 2,987-90 ft., Benoist 2,977 ft., T.D. 2,999 ft., P.B. 2,991 ft.

Dahlgren pool: Hall-Jordan 1 Zellars, SW NW SW 26-3s-5e, location abandoned.

E. Witt et al 2 Gage, NW SE NE 34-3s-5e, pumped 200 bbl., 1,500 gal. acid, McClosky 3,324-42 ft., T.D 3,354 ft.

Hall-Jordan 4 Deerhake, NE NW NE 34-3s-5e, pumped 48 bbl., 6,000 gal. acid, McClosky 3,299-3,310 ft., T.D. 3,328 ft.

Hall-Jordan 3 Deerhake, SW NW NE 34-3s-5e, pumped 225 bbl., 2,000 gal. acid, McClosky 3,309-19 ft., T.D. 3,326 ft.

Dale pool: A. A. Cameron 1 B. F. Johnson, NW SE NE 6-6s-7e, flowed 280 bbl., Benoist 2,910-17 ft., saturation 2,920-40 ft., T.D. 3,039 ft.

Wildcat: Wickwire & Powers 1 Patterson, W½ NW NW 1-4s-6e, dry, Glen Dean 2,723 ft., Hardinsburg 2,767 ft., Golconda 2,856 ft., Cypress 2,988 ft., Cypress sand 3,012 ft., Paint Creek 3,107 ft., Benoist 3,153 ft., Renault 3,201 ft., Aux Vases 3,279 ft., Ste. Genevieve 3,320 ft., Rosiclare 3,390 ft., Fredonia 3,412 ft., T.D. 3,450 ft.

Jasper County

West Liberty pool: Pure 2 Robbins Consolidated, W½ SE NW 20-5n-10e, pumped 218 bbl., 5,000 gal. acid, McClosky 2,797-2,802 ft., T.D. 2,802 ft.

Pure 2 Dickerson Consolidated, W½ NE NW 20-5n-10e, flowed 21 bbl., 5,000 gal. acid, McClosky 2,792-98 ft.

Lawrence County

Russellville pool: Frontier Oil 4 Gillespie, SE SE SW 13-4n-11w, 3,000,000 cu. ft. gas, Bridgeport 770-804 ft., T.D. 804 ft.

Wildcat: R. R. Willis 1 W. H. Pinkstaff, NE NE SE 2-4n-11w, dry, Ste. Genevieve 1,525 ft., Rosiclare 1,560 ft., Fredonia 1,586 ft., slight show oil 1,608-11 ft., T.D. 1,623 ft.

Marion County

Tonti pool: Romine 2 Bardee, SW SE SW NE 33-3n-2e, dry, T.D. 3,675 ft.

Salem pool: Texas 13 W. Fossieck, NW NW SE 29-2n-2e, pumped 200 bbl., 124-qt. shot 4,532-4,608 ft., Trenton 4,498 ft., T.D. 4,630 ft.

Patoka pool: Adams 1 Davidson, W½ NW SE 21-4n-1e, pumped 22 bbl., 10-qt. shot 1,419-29 ft., Benoist sand 1,420-32 ft., T.D. 1,432 ft.

East Patoka pool: Shell 4 Davidson, SE NE NE 34-4n-1e, pumped 174 bbl. oil and 10 bbl. water, 12-qt. shot 1,351-68 ft., Cypress sand 1,342-54 ft., 1,359-69 ft., T.D. 1,369 ft.

Schoenfeld et al 2 S. Thalman, NE NW NW 35-4n-1e, pumped 10 bbl. oil and 18 bbl. water, 20-qt. shot 1,372-75 ft., Cypress sand 1,370-75 ft., T.D. 1,376 ft., P.B. 1,375 ft.

Wildcat: Price Dunbar 1 Teschner, SW SW 27-3n-1e, dry, T.D. 310 ft.

Morgan County

Wildcat: Measely et al 1 Thompson, NW NE NW 1-16n-11w dry, base Pennsylvanian 180 ft., Salem 237 ft., Warsaw 298 ft., Kinderhook 600 ft., Devonian 818 ft., Maquoketa 915 ft., Trenton 1,120 ft., T.D. 1,200 ft.

C. L. Hunt 2 Cuddy, NE NW NW 2-13n-10w, dry, H.F.W. 1,422 ft., T.D. 1,512 ft.

Richland County

Noble pool: Shaffer 1 Jessie Murray, NE SE SW 32-4n-9e, dry, Glen Dean 2,427 ft., Golconda 2,518 ft., Barlow 2,586-2,600 ft., Cypress sand 2,630 ft., Ste. Genevieve 2,937 ft., Rosiclare 2,955 ft., Fredonia 2,988 ft., T.D. 3,056 ft.

Wabash County

Mount Carmel pool: Warren-Bradshaw 1 Kuhn, NE SW SE 17-1s-12w, dry, Biehl 1,527 ft., base Pennsylvanian 1,550 ft., Menard 1,577 ft., Tar Springs 1,705 ft., Glen Dean 1,774 ft., Hardinsburg 1,820 ft., Golconda 1,916 ft., Cypress 2,010 ft., Cypress sand 2,029-38 ft., Ste. Genevieve 2,290 ft., Rosiclare 2,332 ft., McClosky 2,349-58 ft., T.D. 2,367 ft., P.B. 1,535 ft.

Hall-Jordan 1 Tervalt, NE SW SE 17-1s-12w, dry, Menard 1,580 ft., Waltersburg 1,655-73 ft., Glen Dean 1,812 ft., Golconda 1,919 ft., Barlow 2,008-15 ft., Cypress sand 2,028-46 ft., Paint Creek 2,440-57 ft., Benoist 2,170 ft., Renault 2,239-48 ft., Aux Vases 2,778-96 ft., Ste. Genevieve 2,301 ft., McClosky 2,362-73 ft., T.D. 2,383 ft., P.B. 2,057 ft.

O'Meara 4 Gould, SE SE NW 17-1s-12w, pumped 20 bbl., 30-qt. shot 2,065-71 ft. Cypress sand 2,055-71 ft., T.D. 2,599 ft., P.B. 2,071 ft.

O'Meara Bros. 7 Gould, NE NW SE 17-1s-12w, pumped 75 bbl., Cypress sand 2,018-35 ft., T.D. 2,040 ft., P.B. 2,035 ft.

Gilster & Smith 2 Risley, N½ SW SE NE 18-1s-12w, pumped 206 bbl., 10-qt. shot 2,092-97 ft., Cypress sand 2,086-95 ft., T.D. 2,097 ft.

Stroube & Stroube 2 Mount Carmel Comm., SE SE NE 18-1s-12w, pumped 219 bbl., 40-qt. shot 2,064-79 ft., Cypress sand 2,061-79 ft., T.D. 2,079 ft.

Ill.-Mid-Cont. 2 Bancroft, SW NW NE 20-1s-12w, pumped 250 bbl., perf. 2,391-98 ft., 3,000 gal. acid, perf. 2,371-79 ft., 5,000 gal. acid, McClosky 2,371-79 ft., 2,391-98 ft., T.D. 2,494 ft., P.B. 2,385 ft.

O'Meara Bros. 1 Couch, SW SW NW 16-1s-12w, dry, Bridgeport sand 910 ft., slight show of dead oil, T.D. 926 ft.

Allendale pool: Joe Young 8 Fox, NW SE NE 1-1n-12w,

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pumped 12 bbl., 30-qt. shot 2,000-17 ft., Benoist 2,000-17 ft., T.D. 2,081 ft.

Keneipp et al 2-D Cissel heirs, NW NW NE SW 1-1n-12w, pumped 30 bbl., 40-qt. shot 2,025-40 ft., Benoist 2,020-55 ft., T.D. 2,210 ft., P.B. 2,149 ft.

Maud pool: L. B. Jackson 1-A Alka, NE NW SE 34-1s-13w, pumped 130 bbl., 3,000 gal. acid, perf. upper McClosky 4,000 gal. acid, McClosky 2,601-05 ft., 2,632-36 ft., T.D. 2,636 ft.

South Griffin pool: Longhorn 10 Helm, NW SE SE 22-3s-14w, pumped 143 bbl., perf. 2,498-2,504 ft., 2,524-37 ft., 2,632-46 ft., 40-qt. shot 2,752-92 ft., Benoist 2,636-42 ft., Aux Vases 2,757-77 ft., T.D. 2,792 ft.

Wayne County

Barnhill pool: Robinson et al 1 Osborn, NW NE NW 2-3s-8e, pumped 45 bbl., perf. 3,312-20 ft., 1,000 gal. acid 3,000 gal. reacid, Fredonia 3,420 ft., pay 3,428-34 ft., T.D. 3,440 ft.

Boyleston pool: C. R. Craft 1 J. F. Fischer, SE NW NW 34-1s-7e, pumped 7 bbl., 2,000 gal. acid, Fredonia 3,262 ft., pay 3,268-73 ft., T.D. 3,295 ft.

White County

East Calvin pool: Bell Bros. 4 Skiles, NW NW SW 16-4s-14w, pumped 240 bbl., 80-qt. shot 2,830-60 ft., Aux Vases 2,820-40 ft., T.D. 2,863 ft.

Bell Bros. 5 Skiles, SW NW SW 16-4s-14w, flowed 220 bbl., 80-qt. shot 2,820-42 ft., Aux Vases 2,830-48 ft., T.D. 2,854 ft.

Paul Miller 1-A-2 Ford heirs, NW SW SW 16-4s-14w, pumped 60 bbl., 40-qt. shot 2,580-2,600 ft., Cypress sand 2,576-2,607 ft., T.D. 2,607 ft., P.B. 2,600 ft.

Paul Miller 1-A-3 Ford heirs, NW SW SW 16-4s-14w, pumped 50 bbl., 40-qt. shot on bottom, Tar Springs 2,194 ft., T.D. 2,209 ft.

W. Duncan 6-A Hughes, SW NE SE 17-4s-14w, pumped 80 bbl., 25-qt. shot 2,578-92 ft., Cypress sand 2,564 ft., T.D. 2,592 ft.

W. W. Gray 7-H fee, NW SW NW 21-4s-14w, flowed 300 bbl., 30-qt. shot on bottom, Aux Vases sand 2,818-50 ft., T.D. 2,850 ft.

Paul Miller 3-B Ford heirs, NW NW NW 21-4s-14w, pumped and flowed 175 bbl., 60-qt. shot 2,844-59 ft., Aux Vases 2,828-59 ft., T.D. 2,859 ft.

Paul Miller 4-B Ford heirs, SW NW NW 21-4s-14w, pumped and flowed 200 bbl., 80-qt. shot 2,827-54 ft., Aux Vases 2,820 ft., T.D. 2,854 ft.

Buell & Herndon 9 J. J. Bond, SE NE NE 8-4s-14w, flowed 300 bbl., 100-qt. shot 2,798-2,837 ft., Aux Vases 2,798-2,837 ft., T.D. 2,841 ft.

Buell & Herndon 3 A. Garrison, NE SE NW 8-4s-14w, flowed 250 bbl., 80-qt. shot 2,826-52 ft., Ste. Genevieve 2,822 ft., T.D. 2,852 ft.

Buell & Herndon 2 Garrison heirs, W½ NW NW NE 8-4s-14w, pumped 100 bbl., 80-qt. shot 2,812-40 ft., Aux Vases 2,812-38 ft., T.D. 2,841 ft.

Cherry & Kidd 4 W. W. Gray-C, SE SW SE 8-4s-14w, pumped 90 bbl., 40-qt. shot 2,697-2,727 ft., 60-qt. shot 2,830-40 ft., Benoist 2,697-2,727 ft., Aux Vases 2,829 ft., T.D. 2,840 ft.

Haynes & Schnacker, NW SW SE 9-4s-14w, flowed 27 bbl., 80-qt. shot 2,840-65 ft., Aux Vases 2,837-64 ft., T.D. 2,865 ft., P.B. 2,840 ft.

North New Harmony pool: Superior 1 H. C. Ford, SW NW SE 22-4s-14w, pumped 75 bbl., 80-qt. shot 2,857-75 ft., Aux Vases 2,847-68 ft., T.D. 2,916 ft.

Superior 3 B. S. Collins, NW SE SE 22-4s-14w, pumped 102 bbl., 120-qt. shot 2,831-60 ft., Aux Vases 2,831-49 ft., 2,000 gal. acid, McClosky 2,895-2,902 ft., T.D. 2,928 ft.

Yingling et al 2 Ford heirs, SE NE SW 22-4s-14w, pumped 134 bbl., 134-qt. shot 2,841-74 ft., Aux Vases sand 2,842-72 ft., T.D. 2,910 ft., P.B. 2,874 ft.

Superior 3 J. R. Collins, SW SE NW 33-4s-14w, pumped 200 bbl., 200-qt. shot 2,670-2,730 ft., Benoist 2,666-2,730 ft., T.D. 2,730 ft.

Superior 4 Greathouse, NE NW NE 4-5s-14w, pumped 110 bbl., perf. 2,578-2,605 ft., 2,688-2,734 ft., 2,824-50 ft., old well worked over, T.D. 2,903 ft.

Superior 1 Greathouse-A, SE SW SW 34-4s-14w, pumped 76 bbl., 100-qt. shot 2,825-50 ft., Aux Vases 2,827-43 ft., T.D. 2,924 ft.

New Haven pool: Hiawatha Oil 2 Stinson, SE SW NE 19-7s-11e, pumped 60 bbl., natural, Tar Springs 2,092-2,108 ft., T.D. 2,147 ft., P.B. 2,111 ft.

Phillipstown pool: C. D. Neff et al 1 Lamar, NW NW NW 1-5s-10e, pumped 4 bbl., 80-qt. shot 2,965-82 ft., Rosiclare 2,962-82 ft., T.D. 3,040 ft.

Neff & Cochrane 1 Garner, SW SW SW 36-4s-10e, pumped 112 bbl., 165-qt. shot 2,953-62 ft., old well worked over, T.D. 2,972 ft.

South New Harmony pool: Tide Water 1 Elliott, SE SW NE 29-5s-14w, dry, Waltersburg 2,340-63 ft., Tar Springs 2,396-2,409 ft., Glen Dean 2,493 ft., Hardinsburg 2,601-17 ft., Cypress 2,768-2,810 ft., Benoist 2,900 ft., Aux Vases 3,027-52 ft., McClosky 3,126-33 ft., T.D. 3,207 ft.

Storms pool: Sinclair-Ohio 9 Rudolph, SE NW SW 12-6s-9e, pumped 88 bbl., 5-qt. shot 2,273-75½ ft., old well deepened from 2,275-77 ft.

Mill Shoals pool: Southern Pet. 1 McIntosh, NE NW SE 30-3s-8e, pumped 77 bbl., 30-qt. shot 3,200-20 ft., old well worked over, T.D. 3,245 ft.

West Irons pool: Tide Water 1 Shain, NE NW SE 23-6s-8e, pumped 53 bbl. oil and 20 bbl. water, 20-qt. shot 2,770-80 ft. in Cypress, old well worked over, T.D. 2,790 ft.

Wildcat: J. Meyers 1 Hon, NE SE SE 20-4s-14w, dry, Kincaid 1,882 ft., Menard 2,108 ft., Tar Springs 2,307-38 ft., Glen Dean 2,338 ft., Golconda 2,444 ft., Barlow 2,570-76 ft., Cypress sand 2,576-2,602 ft., 2,616-58 ft., Paint Creek 2,712 ft., Benoist 2,755-80 ft., Renault 2,780 ft., Aux Vases 2,855 ft., T.D 2,882 ft.

ILLINOIS DRILLING REPORT

Adams County

C. Schachtsick 1 J. Richart .... NE SW NW 12-2s-8w
Drilling 735 ft.

Bond County

Regent Oil 1 R. N. Harwood .... SW SW NE 6-6n-3w
First report, drilling 300 ft.

Woolsey 1 Chester Sapp ..... NE NE SW 22-5n-4w
First report, S.D. 757 ft.

Clay County

A. R. Madden 1 Ging ..... SE SE NE 17-5n-5e
T.D. 2,397 ft., P.B. 2,356 ft., swabbed 67 bbl. water an hr. while testing casing, squeezed, cleaning out.

Clinton County

Hughes 2 Holman ..... NE SW SE 10-2n-1w
T.D. 1,310 ft., underreaming 6-in.

P. Mosebach 1 Schlarmann ..... NE NW NW 9-1n-3w
Cleaned out to 2,475 ft., put on pump.

Strawser et al 1 Ben Winkler .. SE NW SW 25-1n-4w
Base Pennsylvanian 660 ft., Glen Dean 760 ft., Cypress 927 ft., Benoist 1,077 ft., drilling 1,120 ft. in sand.

Wilson 1 Lippert ..... NE NE NE 27-2n-1w
Glen Dean 1,120 ft., Cypress 1,293 ft., Paint Creek 1,383 ft., S.D. 1,405 ft.

B. E. Martin 1 C. Heinzman ..... SE SE SE 4-2n-1w
Glen Dean 1,092 ft., T.D. 1,105 ft., running 8-in.

Crawford County

Steele (was Cullins) 1 M. S. Davis NE SW NE 23-7n-13w
Drilling 980 ft.

Du Page County

I. C. R. Synd. 1 Bartlett Village .. SE NW NW 2-40n-9e
Drilling 192 ft.

Edgar County

Levy et al 1 Cockroft ..... SW SE SE 11-12n-11w
Aux Vases 930 ft., Ste. Genevieve 944 ft., T.D. 945 ft., running 8-in.

Edwards County

R. B. Martin 1 Lester ..... W½ SW SW 19-2s-10e
Drilling 1,130 ft.

Effingham County

Lynch & Jansen 1 J. Burk ..... W½ SE NW 27-6n-5e
S.D. 1,490 ft.

Fayette County

Allied & Youngblood 1 Mueller .... SW SE SE 3-4n-1w
First report, moving in rotary tools.

Turner Drlg. 1 Williams ..... SW SW NW 6-6n-2e
S.D. 1,423 ft.

Ford County

Nelson et al 1 Erp ..... SW NW SE 19-24n-7e
Drilling 2,818 ft.

Franklin County

Adkins 1 Old Ben Coal H. ..... SE NE NW 29-6s-2e
First report, moving in rotary tools.

Myers Drlg. 1 Rice ..... N½ NE NE SE 26-6s-2e
First report, S.D. 270 ft.

Bay Oil 1 Franklin County Coal Co., SW SW NE 8-6s-3e
Drilling 2,087 ft.

W. O. Morgan 1 J. P. Miner ..... NW NW NE 36-6s-2e
T.D. 2,163 ft., 5½-in. 2,114 ft., 60-qt. shot 2,143-63 ft., flowed 63 bbl. an hr., testing.

Gallatin County

Fitzgerrell 1 Doherty ..... W½ W½ NW 24-8s-9e
Kincaid 1,705 ft., Clore 1,782 ft., Palestine 1,797 ft., Menard 1,908 ft., drilling 1,905 ft.

Ryan et al 1 Crunk ..... N½ NE NW SE 9-8s-9e
Drilling 1,905 ft.

Duncan & Lester 1 E. A. Green .. NE NE NE 14-8s-8e
Cypress sand 2,492 ft., Benoist 2,558 ft., Aux Vases 2,791 ft., Ste. Genevieve 2,833 ft., Rosiclare 2,857 ft., Fredonia 2,865 ft., coring 2,897 ft.

Hamilton County

Texas 1 K. Edwards ..... NW NE NW 11-6s-6e
Benoist 2,946-62 ft., saturated, Aux Vases 3,047-52 ft., 7-in. 3,049 ft., T.D. 3,052 ft., waiting on cement.

Youngblood 1 Johnson ..... SE NW NW 21-6s-6e
Set 10-in. 110 ft., drilling 165 ft.

E. S. Adkins 1 Federal Chem. & Coke Co. ..... NW NW SE 17-7s-6e
T.D. 3,226 ft., set whipstock 2,657 ft., waiting on cement.

Iroquois County

H. C. Detrick 1 Krable ..... NE NE 19-26n-12w
First report, pits.

Jasper County

Pure 1 N. Grove ..... E½ NW NE 16-5n-10e
Set 8-in. 160 ft., waiting on cement.

Lain O. & G. 1 C. E. Henry A. ... SW NW NW 9-6n-10e
Drilling 2,047 ft.

Conner & Arnold 1 First Nat. Bank NE SW SW 1-6n-9e
First report, rig.

La Salle County

O. L. Greer 1 Sam Davis estate .. SW SW SW 23-35n-2e
Drilling 625 ft.

Lawrence County

W. Payne 1 H. Payne ..... NW SW NW 20-3n-11w
Drilling 1,350 ft.

Marion County

Valbert 1 Logan ..... E½ SE SW 25-4n-1e
First report, rigging up standard tools.

Swan-King 1 Martin Cemetery, SW SW SE SW 36-4n-2e
Moving in rotary tools.

McLean County

Funks Grove O. & G. 1 Crawford NW NW NW 28-22n-1e
S.D. 2,115 ft.

Montgomery County

H. C. Detrick 1 W. H. Barnes .. NW NE SE 20-10n-2w
Drilling 1,515 ft.

Pulaski County

R. G. Williams et al 1 W. L. Richey, NE SE SW 9-15s-1e
Devonian 430 ft., drilling 520 ft.

Randolph County

Ruwaldt 1 Schuette ..... NE SE SE 35-5s-5w
First report, spud.

Gode & Murphy 1 McIntyre .... SW SW SW 10-5s-5w
Show gas 270-380 ft., 8-in. 522 ft., drilling 575 ft.

J. R. Rankin 1 B. Bierman ..... SW SW SE 3-7s-5w
Set 5½-in. 929 ft., drilling 946 ft.

St. Clair County

Gus Kunze 1 McCurdy ..... SE SW SW 29-3s-6w
First report, drilling 220 ft.

A. F. Alspach 1 Smith ..... SW SW SE 30-3s-6w
Set 10-in. 22 ft., 8-in. 30 ft., 7-in. 386 ft., S.D. 386 ft.

Burgess 1 Eidman ..... NW SW SE 18-1s-6w
Set 12-in. 76 ft., drilling 130 ft.

G. A. Morris 1 V. Rasp ..... E½ NW NW SW 32-2n-7w
T.D. 165 ft., 10-in. 99 ft., drilling plug.

Shelby County

W. H. Sloan 1 Cutler ..... SE SE SE NE 12-10n-2e
T.D. 1,735 ft., swabbed 1 bbl. an hr., 10-qt. shot 1,730-33 ft., cleaning out.

Tazewell County

Bartelmay 1 Mathis ..... SW NW SW 24-25n-3w
Kinderhook 953 ft., drilling 1,166 ft.

(Continued on Page 139)

Five Locations Staked Near Anderson County Discovery

By H. MARNE SANFORD

DALLAS, Tex., Apr. 21.—Eastern Texas' latest Woodbine sand oil discovery is scheduled for rapid development as the discovery operator last week announced five new locations for his block of 1,200 acres around the new strike.

The new well is Tex-Harvey Oil Co., Dallas, 1 Sarah E. J. Cartmell, Edley Ewing Survey, just 2 miles northeast of the Long Lake field and in Anderson County. It was completed for 346 bbl. of 42.8-gravity oil daily, a slightly higher-gravity oil than that found in the Long Lake field. Shutin pressures at the strike during preliminary gaging early in the week showed 1,975 lb. on the casing and 1,650 lb. on the tubing.

Gas sand was logged in the Woodbine at 5,320-46 ft. with the oil-saturated section being found from 5,366-87 ft. With an elevation of 332 ft., the discovery topped the Pecan Gap chalk at 3,692 ft., Austin chalk at 4,797 ft., Eagleford shale at 5,065 ft. The well is producing through 24 casing perforations from 5,370-74 ft. Geologists have classified the discovery as being separate from the Long Lake field, partly due to its higher gravity oil and also due to its structural position which is 40 ft. higher than low edge wells in the Long Lake field.

The discovery operator has already moved rig 933 ft. north for the first offset to the discovery. Plans have been announced for the successive drilling of at least five tests in the area, all by the discovery operator. Possibility of extension activity was seen as several companies acquired tracts of acreage immediately outside of the discovery block of 1,200 acres. Byrd Frost, Inc., Dallas, was reported to have paid $100 an acre cash plus a one-sixteenth overide for the R. E. Carr tract of 77 acres and $50 an acre cash with a $50 per acre oil payment for the J. H. Collier tract of 70 acres, both adjoining the Tex-Harvey block. Immediate drilling was not indicated.

SUMMARY OF COMPLETIONS

Eastern Texas

	No.	Bbl.	Footage
Oil wells: Hawkins field	2	948	9,355
Gas wells: Opelika field	1	*250	8,077
Grapeland field	2	*233	11,981
Tehuacana field	1	*5.2	2,647
Dry holes: Wildcats	2	.....	6,453
Total	8	.....	38,513

East Texas Field
(1-hour gages)

Oil wells: Longview area	3	216	10,935
Kilgore area	5	133	17,802
Total	8	.....	28,737

*Million cu. ft.

New Wildcats

The early spring exploratory programs of several companies have materially increased the eastern Texas district's list of active wildcat tests. During the past week, excluding previously reported tests in as many as eight different counties of the district, additional wildcats were staked in Cherokee and Van Zandt counties.

CHEROKEE COUNTY.—Roads were being built at the close of the week for the immediate starting of American Liberty Oil's new wildcat 2½ miles southwest of the Ironton community in western Cherokee County. It is to be 1 Jeff Austin, on a 20-acre tract in the Z. Batten Survey. Location is on an original block of 8,600 acres about half of which is across the Neches River in Anderson County, and was taken for American Liberty Oil by V. C. Perryman of Dallas. The wildcat is located near the east center of the block and staked after extensive surface and subsurface geological work had been completed. Spreads out of the block have been taken by Sun Oil, Sinclair Prairie, Magnolia Petroleum and several independents.

VAN ZANDT COUNTY.—Location was staked at the close of the week for a long-planned Woodbine sand wildcat on an 8,000-acre block in the Wallace community 5 miles southwest of Canton and in Van Zandt County. The well is to be drilled by Hickok & Reynolds, West Central Texas operators of Cisco, Tex., and will be 1 J. T. Brown, on an 80-acre tract in the Leander Smith Survey. Spudding is scheduled by May 1, with the contract having been already let to E. T. DeArman of Tyler. The block has been geophysically and geochemically prospected.

MORRIS COUNTY.—C. B. Zuber, Dallas, will start at once his previously announced 5,500-ft. wildcat test in Morris County. It is 1 Blackburn, center of a 100-acre tract in the Ensign B. Smith Survey, 6 miles south of Daingerfield.

EAST TEXAS FIELD COMPLETIONS
(1-hour gages)

Gregg County

Longview area: General American 31 Adams, 90 bbl., 3,584-3,600 ft.
Tide Water 10 Christian, 70 bbl., 3,596-3,604 ft.
Kilgore area: T. D. Humphries 31 A. Spears, 38 bbl., 3,544-46 ft.
J. J. Jenkins Drlg. Co. 5 King, 18 bbl., 3,545-47 ft.
Magnolia 7 Rowland, 20 bbl. in 4 hr., 31 bbl. water, 3,528-55 ft.
Shell 93 Watson, 50 bbl., 3,576-3,680 ft.
Sinclair Prairie 20 King, 60 bbl., 3,420-74 ft.

Upshur County

Longview area: Mudge Oil 5-B Richardson, 56 bbl., 3,718-31 ft.

EAST CENTRAL TEXAS COMPLETIONS

Anderson County

Wildcat: Texas 1-A Greenwood, M. Saliser Sur., 4 mi. NW Palestine, top Pecan Gap 3,107 ft., Austin chalk 4,257 ft., Woodbine 4,815 ft., dry at 5,198 ft.

Henderson County

Opelika field: Lone Star Gasoline Co. 1 Tullas, 250,000,000 cu. ft. gas, perforated casing, 8,064-77 ft.

Houston County

Grapeland field: Grier Bros. & Jackson 1-B Guice, 108,000,000 cu. ft. gas, 25 bbl. distillate per 1,000,000 cu. ft. gas, sand 5,982-6,014 ft., perforated casing, 6,021-28 ft.
Grier Bros. & Jackson 1 Pridgeon, 125,000,000 cu. ft. gas, 30 bbl. distillate per 1,000,000 cu. ft. gas, 5,939-57 ft.

Limestone County

Tehuacana field: Zephyr Oil 6 Peeples, 5,200,000 cu. ft. gas, show oil, 2,641-47 ft.

Navarro County

Wildcat: W. L. Barrett 1 Mahaley, T. J. Chambers Sur., 2 mi. NE Rice, dry at 1,255 ft.

Wood County

Hawkins field: General American Oil 1 Moore, 336 bbl. in 18 hr., perforated casing, 4,593-4,695 ft.
Jackson & Ashcroft 1 Hawkins School, 130 bbl. in 6 hr., perforated casing, 4,570-4,660 ft.

EASTERN TEXAS WILDCAT REPORT

Anderson County

Griffith Bros. 1 Clayton, William Frost Sur., Elkhart area, drilling 3,487 ft.
R. H. & W. Oil 1 Saunders, 17-acre tract in Joseph Ferguson Sur., in Frankston townsite, top sub-Clarksville 4,874-4,910 ft., S. D. 5,225 ft.
Huddleston & Prater 1 Praff, R. Allen Sur., 5 mi. NW Palestine, S.D. 1,530 ft.
B. T. Royalties 1 Coleman, NW cor. Coleman tract in J. A. Box Sur. 10, building derrick.

Camp County

Lucey 1 McKenzie, L. William Sur., ¾ mi. W of Pittsburg field, moving in rotary.

Falls County

Kelsey & Miller 1 Reed, A. de la Serda Sur., 3 mi. NE Marlin, drilling 975 ft.

Fannin County

H. W. English 1 Parkhurst, M. P. Davis Sur., 7 mi. W of Leonard, derrick.
Damon Oil 1 Chaffin, A. C. Ketchum Sur., 4 mi. NE Bonham.

Houston County

G. C. Dixon 1 Texas Long Leaf Lbr. Co., J. Chears Sur., 5 mi. W of Lovelady, S.D. 1,460 ft.

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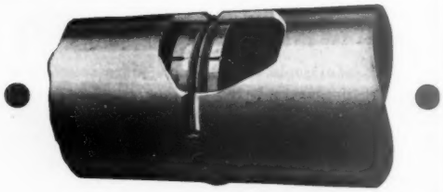

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Lamar County

Whitehead & Dahl Bros. 1 J. M. Barr, P. Compton Sur., 9 mi. S of Paris, derrick.

Limestone County

Zephyr Oil 8 Peeples, R. Scott Sur., in Tehuacana field, deep Travis Peak test, location.

Morris County

C. B. Zuber 1 Blackburn, E. B. Smith Sur., SW cor. of county.

Navarro County

Hargrave Oil 1 C. S. West, M. Boren Sur., 1½ mi. S of Richland, T.D. 3,257 ft., salt water.

Rains County

L. L. Prock 1 F. L. Grimes, SW NE Sam Yandell Sur., 5 mi. NE Emory, top Pecan Gap 2,190 ft., drilling 2,410 ft.

Robertson County

C. C. Baker & Son 1 Middleton, J. S. McNeil Sur., 2 mi. S of Elliott, S.D. 20 ft.

H. A. Clary 1 A. G. Scott, H. F. Thornton Sur., 2 mi. W of Franklin, derrick.

Rusk County

Beddinghouse 1 J. A. McCreary, H. Huejas Sur., 6 mi. SW of Enterprise, top Pecan Gap 2,944 ft., Austin chalk 3,380 ft., Georgetown lime 3,585 ft., S.D. 3,703 ft.

Ross Sears 1 Pool, George May Sur., Laveville area, 12½-in. at 200 ft., 9⅝-in. at 1,008 ft., drilling 1,458 ft.

Upshur County

Sun Oil 1 W. C. Henderson, NW cor. of 27-acre tract in 100-acre tract in Robertson Asher Sur., just outside town of Ore City, 7,000-ft. test, top first anhydrite 6,079 ft., second anhydrite 6,676 ft., base massive anhydrite 6,924 ft., coring 7,835 ft.

L. S. White and O. S. Strickland 1 Gorman, S. G. Clayton Sur., 1 mi. SW of Big Sandy, derrick.

Wood County

Fred Browning and J. C. Robbins 1 M. N. Andrews, SW cor. J. R. Smith Sur., 9 mi. N of Hawkins, location.

Indiana Fields

(Continued from Page 104)

Pumped 13 bbl. in 7 hr. on beam, will install permanent unit.

T. W. Drake 1 Nurrenbern ..... SW NW NW 5-7s-11w
Spud, first report.

Illind 1 Hendricks ..... S½ SE SW SE 31-6s-11w
Drilling 950 ft.

Vigo County

Sage & Farley 1 Campbell .... S½ NE NW 24-11n-8w
Eden 2,378 ft., show gas 2,530 ft., Trenton 2,685 ft., T.D. 2,685 ft., will run 6-in.

Warrick County

Yankeetown Dev. 1 Taylor .... SW SW NW 10-7s-8w
Underreaming 5-in. 1,455 ft.

EASTERN KENTUCKY OPERATIONS

ASHLAND, Ky., Apr. 21.—Completion of two oil wells, one a 35-bbl. producer and the other a small wildcat, and a good gas well mark the report of eastern Kentucky drilling activities this week. Drilling operations, especially in the gas fields, continue to show increases and a few locations have been reported in the oil fields.

Snowden Oil Co. reports the completion of 3 Harris heirs at Sta Camp in the Ross Creek district of Estill County. The well is making 35 bbl. of oil per day at a depth of 836 ft.

Floyd Fitch has completed 1 Sam Crabtree at Mount Oliver in the Big Sinking district of Lee County with a 5-bbl.-per-day production, after being acidized.

Kentucky-West Virginia Gas Co. reports the completion of No. 611 on the M. A. Davidson tract in Floyd County at a total depth of 1,561 ft. in Big lime. The well is making 1,302,000 cu. ft. of gas, 72 hours, rock pressure 317 lb.

DRILLING OPERATIONS

Floyd County

Kentucky-West Virginia Gas Co. operations:
601 Crit Mitchell, Mud Creek, 1,777 ft., lime.
610 Elijah Akers, 1,780 ft., slate.
617 Chris Goble, Buffalo Creek, 20 ft., spudding.
620 M. A. Davidson, Hurricane Branch of Daniels Creek, building road.
5290 Martha Alley, Frazier Creek, 2,000 ft., Little lime.
5295 James Harold, Head Cow Creek, 1,700 ft., slate, shells.
5300 Solomon Akers, Branham Creek, 680 ft., sand.
5301 James C. Jones, building rig.
5305 John Hamilton, Mitchell Fork, moving.
5307 James Stratton, Shop Branch, 85 ft., slate.

Knott County

Inland Gas Corp. operations:
219 Sylvania Cornett, Big Branch of Troublesome Creek, 1,800 ft., Salt sand, fishing.
220 Hindelman Settlement School tract, Smith Branch of Carr Creek, rigging up.

Kentucky-West Virginia Gas Co. operations:
528 Joseph Hall, 1,550 ft., lime.
616 Lark Slone, Jones Fork, idle.
5288 David Martin, 375 ft., sand.
5291 B. G. Dyer, Mill Creek, 2,280 ft., Weir.
5297 Jesse Bates, 983 ft., Salt sand.
5298 Joe King, Bates Branch, 975 ft., Salt sand.
5299 Richard Hall, Dick Hall Branch of Right Beaver Creek, 1,290 ft., shale.
5304 Benjamin Smith, 125 ft., slate.
5306 Levisa Thacker, Mill Creek, location.

Johnson County

Inland Gas Corp. 222 C. F. Conley, near Paintsville, 1,520 ft., brown shale.

Pike County

Kentucky-West Virginia Gas Co. operations:
612 F. J. May, Island Creek, 1,287 ft., slate, shells.
613 N. J. Boyd, set machine.
614 John B. Leslie, Caney Creek of Johns Creek, set machine.
615 A. H. Blackburn, Jones Creek, moving.
5289 Green Thacker, lower Pompey Branch of Levisa Fork, 1,250 ft., sandy lime.
5293 Thomas Ford, Ford Branch, fishing.
5294 Tandy Howell, 2,193 ft., lime.
5302 James W. Bevins, Sloane Branch, 20 ft., spudding.
5303 J. W. Vicars, moving.

WESTERN KENTUCKY COMPLETIONS

Daviess County

Handyville district: Teller 4 E. F. Lebold, north tract, 50 bbl., shot 120 qt., Jett sand, 1,276-1,304 ft., T.D. 1,305 ft.
Master 12 E. W. Richmond, dry through Jett, T.D. 1,230 ft.
Panther district: Newton 1 T. P. Miller, dry, T.D. 2,047 ft.

Hancock County

Saunders School area: Hupp 1 Osia Boling, 10 bbl., shot 60 qt., Jett sand, 396-408 ft., T.D. 410 ft.

Ohio County

Fordsville area: Hart 8 Clark heirs, dry through Jett sand, T.D. 371 ft.
Pleasant Grove: Hoeffler et al 8 W. H. Davidson, 5 bbl., Jett sand, T.D. 300 ft.
Hoeffler et al 2 J. J. Nelson, dry, T.D. 310 ft.

Henderson County

Hebbardsville district: Hupp, Snowden & McSweeney 1 Sally Conway, 40 bbl., Jett sand, 1,581-97½ ft.
Niagara district: A. V. Smith et al 3 Will Triplett, 10 bbl., shot 80 qt., Niagara sand, 642-71 ft.

WESTERN KENTUCKY DRILLING REPORT

Daviess County

Handyville district: Master 4 Price Baird heirs, rigging up.
Teller 1 B. E. Connor, deepening for lower Jett, old T.D. 1,257 ft.
Teller 5 E. F. Lebold, north tract, moving in.
Utica district: Farmer 3 J. E. Brown, north tract, location.
Daugherty 5 O'Flynn & Howard, drilling at 130 ft.
Livia district: United Petroleum 3 Perry Thomas, cleaning out and shooting old well.
United Petroleum 4 Perry Thomas, location.

Henderson County

Hebbardsville district: Sohio 1 L. M. Mauzy, location.

Breckinridge County

Glen Dean district: Rex Pyramid 1 Robert Simmons, location for Corniferous test, 2 miles east of Glen Dean.
Oaks district: Cumberland Petroleum 41 Rolla Richards, rigging up.
Pleasant Grove district: Shaffer et al 12 A. R. Renfrow, rigging up.

West Central Texas Fields

(Continued from Page 134)

Coleman County

L. J. Derrick 1 J. W. Vance, 330 ft. NW of old Texas 1 Vance, also in Sec. 101, E.T. Sur., 3,000-ft. contract, spudded and shut down.
West Coast Prod. Corp. 1 Morris, SW cor. of NE 160 acres, J. Greenwood Sur. 304, setting 7-in. at 2,170 ft.
Cooper Brothers 1 McClure, 1,100 ft. from S and 2,400 ft. from W lines of T. R. Frizzell Sur. 711, 2,800-ft. test, S.D. for repairs 920 ft.
States Oil 1 Hudson, NW SW Sec. 22, Blk. 2, T.&N.O. Sur., 3,600-ft. test, top sand 3,330 ft., set casing, T.D. 3,364 ft.
McMillan & Rominger 1 Wilkerson, 1,570 ft. from N and 257 ft. from W lines Sec. 3, Blk 2, G.H.&H. Sur., 2,800-ft. test, spudded and shut down.
A. P. Heinze 1 Whittington, NW SE Sec. 4, Blk. 2, T.&N.O. Sur., 3,800-ft. test, drilling 400 ft.
G. C. Collier 1 Stafford, Alderata Sur. No. 275, 1,500-ft. test, fishing 900 ft.

Comanche County

Campbell 1 Stark, SW part of Asa Hoxey Sur., S.D. 145 ft., repair, will set 6⅝-in., pipe collapsed, H.F.W. S.D. 732 ft.

Concho County

Floyd C. Dodson 1 Robert Wilson, Thomas Green Sur., 10 mi. SW Eden, show oil and gas 3,792-95 ft., 3,819-20 ft., at 3,828-29 ft. showed 1 bailer water per hr., correction, T.D. 3,829 ft., S.D.O.

Eastland County

Arnold, Kirk et al 1 J. W. Adams, Jr., 2,708 ft. from N and 761 ft. from E lines David McFadden Sur., 2,600-ft. test, top Caddo 2,457 ft., drilling 2,516 ft.

Fisher County

General Crude Oil 12 Flanigan, center of old Royston field, top Ellenburger, 6,094 ft., S.D. 6,746 ft.
F. A. Stephenson 1 Humphries, NW NW Sec. 49, Blk. 1, H.T.&B. Sur., 2,350-ft. test, top lime 2,985 ft., dry lime 2,985-92 ft., T.D. 3,020 ft., show oil 3,018-20 ft., prepare to test.
Landers & Eisele 1 Mose Newman, SE NW Sec. 8, Blk. 20, T.&P. Sur., 10-in. 301 ft., oil lime 3,416-34 ft., treated and tested only mud, 7-in. 3,414 ft., testing, show oil 3,660-65 ft., drilling 4,276 ft.
P. R. Long 1 Maberry, SE cor. A. A. Spring Sur., 2 mi. SW of McCaully, show oil 3,250-79 ft., waiting on spudder.

Hamilton County

A. J. Caldwell 1 W. W. Jones, 1002 ft. from NE, 150

ft. from SE lines W. H. Crowder Sur., correction, S.D. 2,999 ft.

Groover & Rose 1 Joe Fuqua, 1600 ft. from W and 640 ft. from S lines of J. W. Bowers Sur., 3,000-ft. test, 13½-in. 310 ft., 8¼-in. 1,640 ft., S.D. 3,100 ft.

Jones County

H. Hines and W. D. Brookover 1 A. M. Wimberly, SW SW Subd. 91, De Witt C.S.L. Sur., 2,500-ft. test, saturation 2,215-33 ft., installing pump, est. 50 bbl. oil per day, show oil 2,530-33 ft., testing.

Danciger Oil & Ref. 1 Jacob Foster, S½ W 100 acres, SW¼ Sec. 13, Blk. 13, T.&P. Sur., 3,000-ft. test, 8¼-in. at 1,782 ft., drilling 2,776 ft.

Fain-McGaha 1 Cooper, SE SE SW Sec. 20, Blk. 15, T.&P. Sur., 4,000-ft. test, 5½-in. at 4,919 ft.

W. W. Fondren 1 C. P. Rogers, 126-acre tract in N½ Sec. 32, Blk. 18, T.&P. Sur., 3,100-ft. test, 15½-in. at 100 ft., drilling 2,620 ft.

Groover & Rose and Jones & Stasney 1 Owens, SE SE Sec. 46, Blk. 15, T.&P. Sur., 2,000-ft. test, 8¼-in. at 1,735 ft., show oil 2,110-14 ft., 7-in. 2,165 ft., T.D.

J. J. McMahon 1 Miller, 400 ft. from S and 330 ft. from E lines Lot 13, Warren Subd. 125, drilling 403 ft.

Merry Bros. & Perrini and Butler and Horne Drilling Co. 1 Collins, Lot 25, Godwin & Warren Subd., location.

McCulloch County

Clark 1 Lively, SE cor. Sec. 931, H. F. Hetzfeldt Sur., 650-ft. test, 7-in. 820 ft., drilling 953 ft.

Menard County

W. F. Sorrel 1 Wilkerson, NW cor. Sec. 1549, C. A. Zimmerman Sur., Abst. 827, 4,000-ft. test, correction, 15½-in. at 190 ft., S.D. repair 300 ft.

Mills County

C. D. Lane 1 Egger, 2,078 ft. from N and 450 ft. from W. lines Sec. 4, Wm. Haynes Sur., 3,500-ft. test, 8¼-in. at 791 ft.

Three Widows Oil 1 Burdett, 467 ft. from N and W lines Lot 59, Hayes C.S.L. Sur., 3,000-ft. test, location.

Palo Pinto County

Hickok Prod. and Reynolds 1 J. R. Halsell, 467 ft. from S and W lines Sec. 92, B.B.B.&C. Sur., Abst. 105, 5,500-ft. test, 1,000,000 cu. ft. gas from 4,225-45 ft., S.D.

W. K. Gordon 1 Nolan, NE SE Sec. 86, Blk. 3, T.&P. Sur., 3,500-ft. test, fishing 3,810 ft., show gas in sand.

P. F. Cole 1 Crawford, 467 ft. from W and 90 ft. from N lines Sec. 888, T.E.&L. Sur., 5,000-ft. test, location.

Parker County

J. L. Higginbotham 1 Wheeler, SE. cor. J. B. Brannon Sur., Abst. 1928, 5,000-ft. test, spudded and waiting on rotary.

Shackelford County

B. F. Cotton Warehouse 1 Snyder, NE SW NE Sec. 32 L.A.L. Sur., 800-ft. location.

J. F. Baker and M. E. Daniels 1 Davis, SE NW Sec. 3, Blk. 13, T.&P. Sur., 1,700-ft. test, reaming 7-in. at 2,241 ft.

E. M. Doloach 1 Cook, SE SE NE Sec. 64, E.T. Sur., spudded and shut down.

Georgian Oil 2 Blach, 1,290 ft. from SE and 540 ft. from SW lines, Sec. 391, T.E.&L. Sur., spudded and S.D.

Ungren & Frazier 1 Elliott, NW NW Sec. 19, L.A.L. Sur., 850-ft. test, drilling 867 ft.

Glen Myers 1 Green, SE NW Sec. 68, Blk. 12, T.&P. Sur., 1,500-ft. test, drilling 320 ft.

Aragon Oil 1 Walls Pasture, SW cor. Sec. 39, B.A.L. Sur., 4,000-ft. test, reaming 246 ft.

Somervall County

M. E. Davis 1 Cousins, 457 ft. from SE and NE lines of tract in John Echols Sur., 7,500-ft. test, location.

Stonewall County

Leader Oil 3 Carlisle, 2,136 ft. from N and 2,127 ft. from E lines of Sec. 292, Blk. D, H.&T.C. Sur., 5,250-ft. test, drilling 3,900 ft.

Shell 1 Rutherford, SE NE Sec. 144, Blk. 1, H.&T.C. Sur., top Ellenburger 6,189 ft., T.D. 6,239 ft., salt water, S.O., moved off rotary.

Taylor County

Ce-Beth Oil 1 City of Abilene, south shore of Lake Abilene on city property, 4,000-ft. test, T.D. 2,480 ft., top lime 2,443 ft., show oil 2,453-78 ft., fishing 2,605 ft.

Illinois Fields

(Continued from Page 136)

Vermilion County

Sylvester 1 Trisler ..... NE NE SE 30-18n-13w S.D. 185 ft.

Wabash County

Ill.-Mid-Cont. 1 J. Keiffer ..... SW SW NE 32-1s-12w Menard 647 ft., Waltersburg 1,710 ft., Vienna 1,768 ft., Glen Dean 1,885 ft., Hardinsburg 1,915 ft., Golconda 1,965 ft., Barlow 2,073-79 ft., Cypress sand 2,115 ft., Paint Creek 2,214 ft., Renault 2,298 ft., Aux Vases 2,320 ft., Ste. Genevieve 2,350 ft., drilling 2,437 ft.

Wayne County

J. W. Sanders 1 Al Hubble ... E½ SW SE 30-2n-8e Glen Dean 2,467 ft., Barlow 2,643-58 ft., Cypress sand 2,665 ft., Aux Vases 2,917-38 ft., Ste. Genevieve 2,971 ft., Rosiclare 2,983 ft., Fredonia 3,013 ft., pay 3,013-31 ft., T.D. 3,038 ft., 5½-in. 3,012 ft., waiting on cement.

Pure 1 T. R. Michels A ..... W½ SW NW 25-2n-7e T.D. 3,065 ft., 5½-in. 2,998 ft., 5,000 gal. acid, S.D.

Gordan-Muhlbach 1 H. Burns .... W½ SE SW 36-2n-8e Spud.

Washington County

Magnolia 1 Anton Stern ..... SE SE SE 34-3s-3w Menard 740 ft., Glen Dean 925 ft., Hardinsburg 947 ft., Golconda 1,015 ft., Barlow 1,090 ft., Cypress 1,115 ft., Cypress sand 1,135 ft., Paint Creek 1,213 ft., Benoist 1,273 ft., Benoist sand 1,280 ft., Renault 1,350 ft., Aux Vases 1,377 ft., Fredonia 1,488 ft., drilling 1,545 ft.

H. Hubbard 1 Harre ..... SW SW SW 1-3s-4w Fishing 760 ft.

White County

O. G. Tydings 1 Emil Doerr ... NE NE SE 21-4s-9e First report, rig.

L. B. Jackson 1 Parker ..... SW NW NW 35-5s-10e S.D. 3,174 ft.

L. B. Jackson 1 Hanna ..... NE NE NE 28-5s-10e Rigging up rotary.

Continental 1 Ackerman ..... NE NW NE 25-5s-10e Aux Vases tested water, P.B. to test Benoist.

H. E. Ledbetter et al 1 Winter .... SE NE SE 24-5s-9e Set 10-in. 70 ft., drilling 545 ft.

Williamson County

Sun 1 Old Ben Coal ..... NE NE NW 13-8s-2e Benoist 2,500 ft., Renault 2,530 ft., Aux Vases 2,553 ft., Ste. Genevieve 2,655 ft., 60-min. D.S. test 2,610-23 ft., received 15 ft. mud, running 7-in. to test Aux Vases.

Oklahoma Fields

(Continued from Page 125)

Upper Pawhuska 888 ft., lower Pawhuska 1,220 ft., Avant 2,320 ft., Checkerboard 3,308 ft., Cleveland 3,357 ft., drilling 4,100 ft., Lincoln County.

26-19-9, SE SE NE ..... Jackson 1 Prince Oswego 1,758 ft., Coal 1,904-06 ft., sand 1,980-2,035 ft., dry, sand 2,335 ft., H.F.W., drilling ahead, Creek County.

25-20-6, SW SW SW ... Sand Springs Home 1 Launer Spud 120 ft., Pawnee County.

22-21-9, SE NW NW ..... Dillard 1 Osage Cleveland sand 1,680-1,736 ft. show gas, Big lime 1,932-41 ft., Oswego 1,971-2,032 ft., pink lime 2,235-40 ft., drilling 2,347 ft., Osage County.

18-24-8, SW NE SW NE ..... Miller 2 Osage Big lime 1,999-2,058 ft., show gas, Oswego 2,161-2,210 ft., pink lime 2,377-86 ft., Mississippi chat 2,523-36 ft., Hominy Wilcox 2,796-98 ft., T.D., filled up and flowed 1½ hr., then flowed 100 bbl. by heads in 3½ hr. through casing, testing, Osage County.

West of the Meridian

36-4-21w, W½ NE NW ..... Mutual 1 Caves Drilling 1,504 ft., Jackson County.

12-2-5w, SE NW NW ..... McCasland 1 Prince Sand 1,555-64 ft., cored sand and shale 1,634-54 ft., drilling 2,108 ft., Stephens County.

2-5-12w, SE NW ..... Texas 2 Smith Hunton 1,447 ft., show oil 1,465-75 ft., cored 1,536-39 ft., brown lime, drilling 1,680 ft., Caddo County.

22-5-7w, NE NE SE ..... Atkinson 1 Juks Old well drilled deeper from 4,005 ft., first report, Grady County.

13-7-2w, SE NW NE ..... Delaney 1 Montgomery Belle City 5,095 ft., drilling 5,505 ft., Cleveland County.

30-7-17w, NW NE SE ..... Artie Baker 1 Coakley T.D. 1,287 ft., acid, swab 1 bbl. oil an hr. and 3 bbl. water, Kiowa County.

17-15-3w, SW SE SW ..... Continental 1 Leniger First report, Logan County.

12-19-1w, N½ SE SW ..... Gardner 2 Lowry Chattanooga 4,691 ft., Misener 4,720 ft., show oil 4,730-37 ft., attempt D.S. test, no results, cored oil-stained sand 4,737-47 ft., T.D., D.S. test with packer at 4,737 ft., filled up 1,300 ft. gas and mud and 300 ft. oil in 26 min., set casing, Payne County.

33-19-4w, SW NE SW ..... Kerlyn 1 Waring Fished 1,200 ft. tubing, T.D. 4,810 ft., attempt D.S. test, S.D., Logan County.

South of the Base Line

3-1s-13w, E½ W½ NE ..... Runion 1 Whitehead S.D. 342 ft., Comanche County.

35-1s-5w, NE NE ..... Skelly 4 Frensley Drilling Viola lime 6,313 ft., Stephens County.

24-2s-15w, NW NW NE ..... Price 1 Crowe Drilling 1,975 ft., Tillman County.

26-2s-13w, NW NE ..... South Port 1 Harris S.D. 2,286 ft., Cotton County.

8-3s-5w, NW SW NW ..... Brown 1 Lowry Drilling lime 1,680 ft., Stephens County.

13-6s-6w, NE NE SW ..... Johnson 2 Bound Drilling 1,820 ft., shale, Jefferson County.

14-6-14e, SW SE NE ... Taylor & Davis 1 Schussler Drilling shale 725 ft., Choctaw County.

20-6s-18e, SE SW NE ..... C. F. Carter 1 Shull S.D. 335 ft., Choctaw County.

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MICHIGAN OPERATIONS

Salina Gas Reported in Allegan County as Drilling Revives

By OTTO C. PRESSPRICH

SAGINAW, Mich., Apr. 21.—Increased drilling activity in Michigan has developed with moderation of weather conditions. The pickup was noticeable last week as the state Conservation Department granted 21 drilling permits for one of the most active weeks of the year. Completions totaled 16 including six oil producers and one gas well. Other completions were dry holes, among them several wildcat failures.

Twelve counties shared in the newest list of permits. Three locations were listed for Clare, Osceola and Ottawa counties, two each for Allegan, Van Buren and Kent and one apiece to Bay, Midland, Lake, Monroe, Cass and Isabella. The year's permits total was increased to 223.

Two 75-bbl. producers were completed in Allegan County and gas pays were logged in two other southwestern Michigan tests. Reports were that Regal Dutch Petroleum Co. 2 Heasley, Section 21, in Allegan's Old Salem field, encountered natural gas in Salina sand below 2,700 ft. The test is the first in the field scheduled for the Trenton. It will be deepened to the objective. Wolverine Natural Gas Co. 1 Kidder in Barry Township, Barry County, also encountered gas in the Monroe around 2,100 ft.

Robert W. Atha 1 Jaqua, a wildcat, drilled into water at 3,324 ft. The test had shown oil in Monroe at 3,265 ft. In Belvidere-Montcalm, Belvidere Oil Co. 1 Shade was a failure as a gas test in Section 20.

Drilling has started on Socony-Vacuum 1 Sneary Dundee oil test in Section 14.

In Central Michigan, Winterfield-Clare district, Sun Oil Co. completed a 135-bbl. well after acid.

● SUMMARY OF COMPLETIONS ●

	No.	Bbl.	Footage
Oil wells: Allegan County	2	150	3,177
Clare County	1	135	3,797
Midland County	1	3	3,411
Monroe County	1	60	2,154
Ottawa County	1	8	1,812
Gas wells: Gratiot County	1	*2.1	997
Dry holes: Allegan County	2	.....	2,509
Clare County	1	.....	4,067
Macomb County	1	.....	3,011
Montcalm County	2	.....	4,614
Osceola County	1	.....	1,232
Ottawa County	1	.....	1,785
Shiawassee County	1	.....	2,175
Total	16	.....	34,741

*Million cu. ft.

AVERAGE DAILY PRODUCTION

	April 19
Temple	6,905
Buckeye	1,950
Walker	4,205
Van Buren County	2,700
Allegan County	4,600
Wise	1,400
Adams	3,525
Total Michigan	37,405

MICHIGAN COMPLETIONS

Allegan County

Casco Township: Bridger-Basin Oil Co. 1 Tripp, SE SW SW 34-1n-16w, dry, T.D. 1,180 ft.
Cheshire Township: Clapsaddle & Harris 1 Schamtz, SW SW SE 26-1n-14w, dry, T.D. 1,329 ft.
Salem Township: Socony-Vacuum Oil Co. 3 Green, E½ SE SW 11-4n-13w, 75 bbl., acid, T.D. 1,595 ft.
J. L. Birenkrant 1 Green, NE SE NW Sec. 14, 75 bbl., acid, T.D. 1,582 ft.

Clare County

Sheridan Township: Chapman Oil Co. 1 Reger, E½ SE NW 3-17n-3w, dry, T.D. 4,067 ft.
Winterfield Township: Sun Oil Co. A-3 State-Winterfield, N½ NE SW 36-20n-6w, 135 bbl., acid, T.D. 3,797 ft.

Gratiot County

Sumner Township: Home Natural Gas Corp. 1 Church, C SW 32-11n-4w, 2,100,000 cu. ft. gas, T.D. 997 ft.

Macomb County

Lenox Township: L. C. Johnson 1 Pohly, NE SE SE 22-4n-14e, dry, T.D. 3,011 ft.

Midland County

Porter Township: Pure Oil Co. 4 State-Porter, N½ N½ SE 15-13n-1w, 3 bbl., acid, T.D. 3,411 ft.

Monroe County

Dundee Township: Consolidated Developers N-2 Bragg, SE NW SW 30-6s-6e, 60 bbl., acid, T.D. 2,154 ft.

Montcalm County

Belvidere Township: Belvidere Oil Co. 1 Shade, S½ N½ NW 20-12n-7w, dry, T.D. 1,290 ft.
Pierson Township: R. W. Atha 1 Jaqua, SE SE SE 23-11n-10w, dry, T.D. 3,324 ft.

Osceola County

Lincoln Township: Taggart Bros. Co. 9 Williams, S½ S½ SE 31-18n-10w, dry, T.D. 1,232 ft.

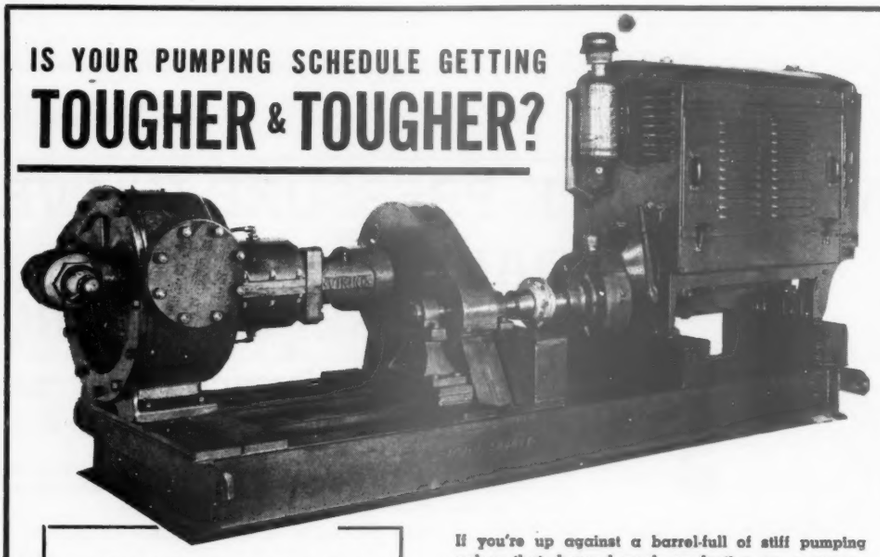
Ottawa County

Georgetown Township: Fisher-McCall Oil & Gas Co. B-1 Moss, SE NW NE 2-6n-13w, 8 bbl., acid, T.D. 1,812 ft.
Polkton Township: Smith Petroleum Co. 1 Feichtinger, NE NE NW 6-8n-14w, dry, T.D. 1,785 ft.

Shiawassee County

Bennington Township: Lima Oil Co. 1 Gladden, SE NE NW 35-6n-2e, dry, T.D. 2,175 ft.

IS YOUR PUMPING SCHEDULE GETTING
TOUGHER & TOUGHER?



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Close Fractionation Needed to Recover Isomers From Gas

(Continued from Page 43)

comes again available as an overhead product. At this point the cycle starts in reverse: With decreasing reflux ratio, the isobutane which has been stored in the column becomes again available, and tends to decrease the reflux ratio still further, finally reaching a value that permits an excessive amount of normal butane to pass overhead.

During the remainder of the cycle off-specification isobutane is produced until a point is finally reached when all the isobutane has been taken out of the system, and a new cycle begins.

In order to eliminate this cycling process it is necessary to control the reflux as a function of the amount of overhead product withdrawn so that the reflux ratio remains approximately constant regardless of the actual rate of withdrawal of the overhead product. A ratio controller on the reflux is probably the best means of accomplishing this. As long as the reflux ratio remains constant, or decreases slightly, as the rate of net overhead production decreases, the operation is stable, and no difficulties in cycling are encountered.

It should be pointed out that the production of isobutane is not economically feasible in every gasoline plant. Before proceeding with such a project, an analysis should be made of the potential feed of iso and normal butane to the isobutane tower, since it is impossible even with the most elaborate fractionating system to recover all the isobutane.

In determining the net possible production of isobutane it should be assumed that the normal butane produced will contain 3 or 4 per cent of isobutane. The minimum production of isobutane which would be economically possible, depends, of course, on the available market price for the product, and anyone considering the installation of isobutane fractionating system should investigate the market possibilities and the price per gallon which he might receive.

The first isobutane installation reviewed consists of a two-column hookup which was deemed advisable, due to the excess height of one column. The additional number of trays were required, due to the desire to keep the reflux ratio down to 15:1. In this particular plant tubular reflux condensers are mounted immediately above the respective columns. In these condensers water is pumped countercurrent with the gas to supply necessary cooling for condensing reflux, which is gravitated back to the column. This method of handling reflux has both merits and demerits. Engineers, experienced in design and operation, disagree upon the method of handling reflux. Some advocate pumping, and others advocate gravitated reflux. You will also notice that in this particular plant the isobutane, normal butane fractionator consists of two towers of 3 by 30-in. plates operated in series. By continuously pumping bottoms from the primary tower to top plate of secondary tower, results obtained are comparable to results obtained with a continuous column of equal number of plates.

The last plant covered by this resume is that of the Warren Petroleum Corp. at Salem, Ill., which manufactures commercially pure propane, isobutane and normal butane. The overall cost of making the isobutane cut is somewhat difficult to compute due to the merging of a great deal of the equipment between the isobutane column and the other columns. This merging takes in the size of the cooling tower, pumping facilities, boiler capacities and size of buildings. However, computed as closely as possible, the following is probably a close estimate of the actual investment cost. It should be kept in mind that this was a new plant, designed for the manufacture of isobutane and that an old plant, redesigned for the manufacture of this product, would necessitate the expenditure of perhaps two or three times this amount:

Initial cost of column and accessories	$35,000.00
50,000 gal. storage of 114 lb. W.P.	10,000.00
Total	$45,000.00
Cost per gallon	11.25
Operating and maintenance cost per month	1,000.00
Cost per gallon	.0082

These figures, of course, do not take into consideration loading losses, tank-car rentals or payment for gas, but represent only the manufacturing expense.

The flow diagram of this plant shows absorption gasoline received into a raw-feed tank from which the fluid is pumped through heat exchangers into a column termed "deethanizer." This column is not in a true sense a deethanizer in that pure ethane is not refluxed and the temperatures and pressures are not sufficient for the liquefaction of pure ethane. An analysis of the overhead, at times, shows as much as 50 per cent propane, and the column control is operated in such a manner that only such propane as can be sold is saved, treated and stored. This practice is particularly recommended when there is a considerable amount of hydrogen sulfide present, as a large per cent of this undesirable material will be released in the primary column, thus saving much of the cost and operating headaches of corrosion

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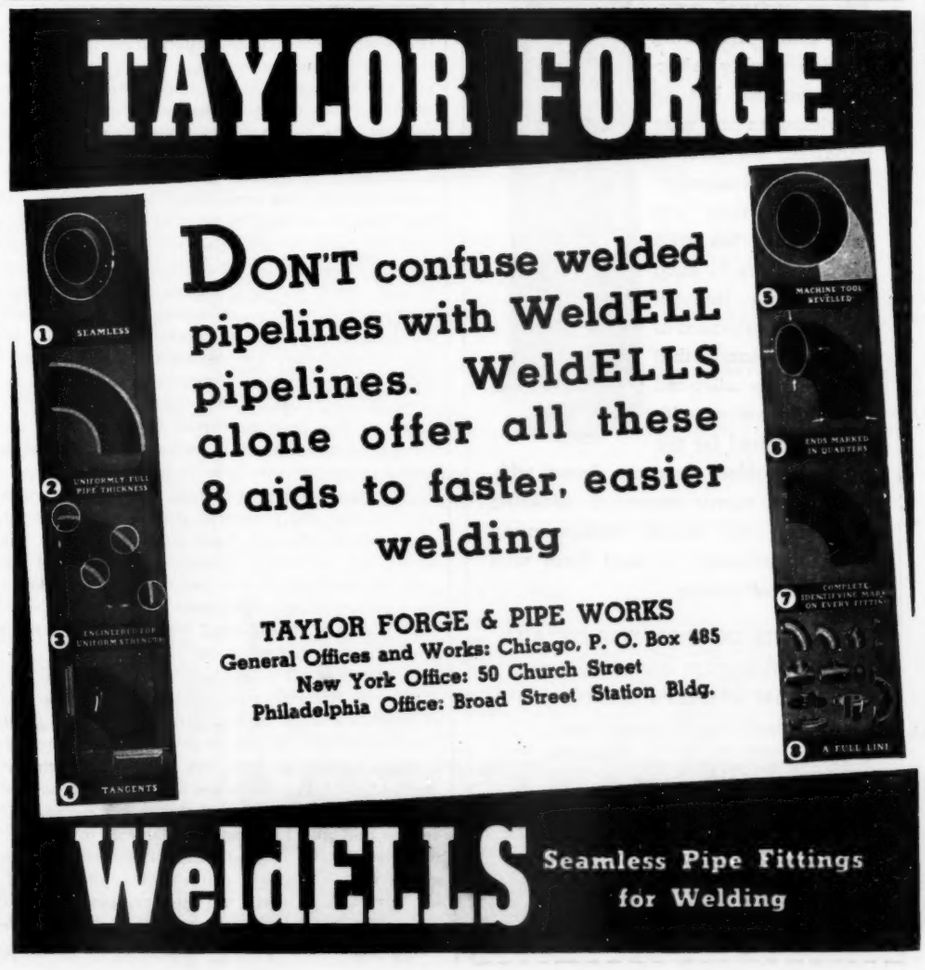
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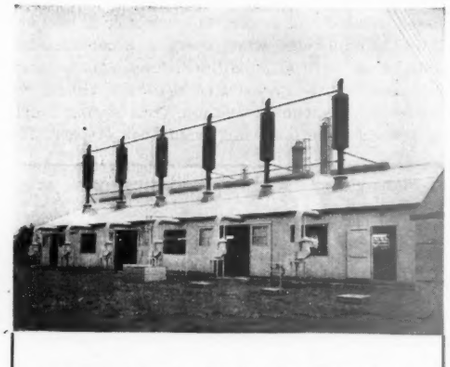

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OPERATING CONDITIONS OF LIQUEFIED PETROLEUM GASES AND MANUFACTURING EQUIPMENT BEING USED AT NATURAL-GASOLINE PLANTS IN MID-CONTINENT FIELD

This plant introduces a raw feed—44,244 gal. to fractionator having an analysis of the following:

	Liquid volume per cent		Liquid volume per cent
Methane and ethane	12.48		
Propane	10.22	Normal butane	33.66
Isobutane	8.01	Pentanes and heavier	35.63

SYSTEM

Conditions—	Grade gasoline	Depropanizer	Isobutane	Propane
Size columns	36 in. by 53 ft. 10 in.	36 in. by 49 ft.	2-3 by 60 ft.	16 in. by 35 ft.
Number of trays	30	30	60	30
Operating-pressure gage	250 lb.	250 lb.	125 lb.	350 lb.
Kettle temperature (F.)	288°	194°	172°	155°
Temperature of overhead	168°	127°	144°	100°
Volume of feed	44,244	20,685	10,643	10,042
Volume of overhead	20,685	10,042	3,544	5,521
Volume of product	23,559	10,643	7,099	4,521
Point of feed entry	15th tray	15th tray	30th tray	10th tray
Location of temp. control	Kettle	8th tray	15th tray	5th tray
Location of press. control	Kettle	Kettle	60th tray	Kettle
Reflux rate	2:5:1	5:1	15:1	1.6:1
Approximate heat load	50 hp.	50 hp.	42 hp.	10 hp.
Water requirement	500 gal./min.	250 gal./min.	200 gal./min.	50 gal./min.

ANALYSIS OF 108,000 GAL. OF RAW FEED

Methane	2.50	Isobutane	5.09
Ethane	7.40	Normal butane	27.00
Propane	21.58	Pentane and heavier	36.43

SYSTEM

Condition—	Deethanizer		Grade gasoline		Depropanizer		Isobutane	
Size column	4-6 by 61 ft.		4 by 55 ft.		3 by 61 ft.		4 by 85 ft.	
Number trays	30		30		30		50	
Operating pressure	250 lb.		140 lb.		250 lb.		125 lb.	
Kettle temperature (F.)	242°		226°-271°		227°		170°	
Top temperature (F).	110°		158°		124°		144°	
Reflux ratio	6:1		5-5:1		6-5:1		17:1	
Reflux condensing surface	1,560 sq. ft.		1,526 sq. ft.		1,060 sq. ft.		1,963 sq. ft.	
Steam hp. required	165		152		66		97	
Reboiler surface	310 sq. ft.		310 sq. ft.		310 sq. ft.		660 sq. ft.	
	Kettle prod. g.p.d.	Overhead g.p.d.	Kettle prod. g.p.d.	Overhead g.p.d.	Kettle prod. g.p.d.	Overhead g.p.d.	Kettle prod. g.p.d.	Overhead g.p.d.
Methane	.....	2,700	.....	.....	.....	.....	.....	.....
Ethane	.....	7,992	.....	.....	.....	.....	.....	.....
Propane	10,000	13,308	.....	10,000	.....	10,000	.....	.....
Isobutane	5,500	.....	.....	5,500	5,500	.....	.....	5,500
Normal butane	8,000	.....	.....	8,000	8,000	.....	8,000	.....
Pentane and heavier	60,500	.....	60,500	.....	.....	.....	.....	.....
Total	84,000	24,000	60,500	23,500	13,500	10,000	8,000	5,500

treating. The overhead vapors pass through atmospheric condensers into a reflux accumulator and the volumn of reflux that is not needed for refluxing the column goes to the air as waste product. The base product, consisting of propane and heavier, is pressured through the treater plant at 175-lb. pressure for the hydrogen sulfide removal and for the sweetening of the gasoline to pass the doctor test. It is then pumped through heat exchangers into the second column. The specified gasoline is taken from the base of this second tower through coolers and into storage. The overhead vapors, consisting of iso and normal butane and propane, are condensed into the reflux accumulator. The excess reflux not needed for tower operation is pumped through heat exchangers into the third column termed "depropanizer." The propane vapors from overhead are condensed into the reflux accumulator, the excess reflux being propane goes through dehydrator to remove any suspended moisture and into storage. The butanes are pressured from the base of the depropanizer through heat exchangers into the fourth, or isobutane, column. The overhead vapors are condensed into the reflux accumulator, the excess reflux as isobutane goes through coolers to storage. The normal butane is taken from base of tower through coolers to storage.

In conclusion I might add that before any expenditures are incurred relative to the extraction of isobutane at a natural-gasoline plant, a great deal of thought should be given, not only to the possible income derived, but also to the engineering and data in connection with the actual construction and operation of the unit. One should realize that any isobutane available is in the raw make and not in the fractional analysis of the gas, that at least 20 per cent of the available product will be lost in the various fractionators, and that even with the best operation, considerable difficulty is continually experienced in keeping the columns working in unison in order to recover a product meeting the expected specifications.

Michigan Reduces Cost Of Analyzing Samples

Regulations have been changed to provide for issuing oil and gas core tests for $1. The fee for tests of cores from which production is anticipated will remain at $25. In approving the change, the state Conservation Department did not set the effective date, but F. R. Frye, state petroleum engineer, said a written notice that the core tests are for geologic information only will be required, but that such permits will "be held in confidence."

In a legislative action, the house of representatives has received a proposal for new distribution of Michigan's 2 per cent severance tax, to benefit county road commissions. Proposed division is one-fifth to the road commission, one-fifth to the county, one-fifth to the unit in which the well is located, and two-fifths to the state. That division would halve the portion now going to the local governing unit. The February severance tax, 2 per cent of the well-head value of Michigan gas and oil, totaled $29,640. Well-head value was down $200,000 to $1,482,000, as compared with January.

Oriskany Sand Test Dry In Southern New York

COUDERSPORT, Pa., Apr., 21.—One well was finaled in the northern Oriskany sand gas fields in the past week, increasing the total to 18 completions to date this year, compared with 19 at the same time last year.

The well was completed by Belmont Quadrangle Drilling Corp. on the Mina G. Phipps farm in Allen Township, Allegany County, New York, which was dry at 2,987 ft. The top of the Oriskany was found at 2,969-77 ft. A gas show of 2,000 cu. ft. daily was found at 2,967 ft. and 10 gal. of salt water appeared in the hole in 12 hours.

Steveville Well Produces From Lower Cretaceous

By VICTOR LAURISTON

CHATHAM, Ont., Apr. 19.—Average daily crude production from Turner Valley for the week ending April 7 was 25,923 bbl. compared with 26,442 bbl. in the week preceding. Natural gasoline production was unchanged at 905 bbl. a day. Other Alberta fields produced 145 bbl. a day, also unchanged. The Princess-Steveville well, which produced 197 bbl. a day the previous week, was shut in.

Turner Valley Lime Tests

North Turner Valley: Major Oil Investments 1, LSD 5, 34-20-3w5, below 6,852 ft. after getting the Madison lime at 6,406 ft.

Foothills Oil & Gas 8, LSD 12, 27-20-3w5, below 7,944 ft., more than 349 ft. in the Madison.

West Central section: Anglo-Phillips 2, LSD 9, 35-19-3w5, finished at 7,749 ft., completing production tests.

Regal Royalties 1, LSD 14, 24-19-3w5, finished at 8,270 ft., 493 ft. in the Madison lime, and is acidizing and testing. Independent Royalties 1, LSD 7, finished at 8,225 ft., completing production tests.

Okalta Oil 10, LSD 12, 18-19-2w5, finished at 7,970 ft., testing after reacidizing. Calmont-Northwest 3, LSD 4, got the black lime at 8,048 ft. and finished at 8,060 ft., 448 ft. in the Madison. It is acidizing and testing.

Southwest field: Northwest-Hudson's Bay 5, LSD 10, 8-18-2w5, got the Madison lime at 8,056 ft. and is resuming after setting 7-in. casing at 8,077 ft.

Deep Tests Indicated

Two wells drilling west of the old Central Turner Valley naphtha area and north of the present west-central crude producers, will probably find it necessary to go to exceptional depth to reach the producing horizons in the lime. Empress Royalties 1, LSD 5, 2-20-3w5, is below 8,204 ft. and has not yet reached the Dalhousie sand, and Harris Royalties 3, LSD 16, 3-20-3w5, about ¼ mi. west and ½ mi. north, is shut down in the Blairmore at 8,301 ft. Both wells are likely to go below 9,000 ft. to get production in the lime, and indicate a steeper dip of the formations west of the old central field than in either the north or west-central areas.

New Tests Starting

North Turner Valley: Royalite-Model 1, LSD 1, 22-20-3w5, working on cellar.

Major Oil Investments 4, LSD, 8-21-3w5, working on cellar.

West Central field: Drillers & Producers 3, LSD 3, 7-19-2w5, working on cellar. Drillers & Producers 2, LSD 12, working on derrick. Drillers & Producers 1, LSD 13, rigging.

United-British American 1, LSD 16, 12-19-3w5, permit issued. Location is in a previously untested section south and east of some good producers.

Other Tests

Pouce Coupe: Guardian Oil 1, 7-80-12w6, is preparing to resume from 6,641 ft. after the winter shutdown. It is in the Triassic formation an estimated 500 ft. above the main potential oil horizon.

Clearwater: Clear Oils 1, LSD 6, 2-35-10w5, failed to develop commercial production at 1,333 ft. and is deepening below 1,502 ft. Ram River 1, 1-37-11w5, shut down in the Devonian lime at 3,000 ft.

Pincher Creek: Weymarn Petroleums 3 has permit for test in LSD 5, 24-6-2w5. Weymarn 2, LSD 5, 7-6-1w5, shut down last year owing to faulting, is pulling 4-in. casing and will deepen after reaming for 8-in.

Blood Indian Reserve: Northwest-West Petroleum 1, LSD 3, 20-5-23w4, is below 7,745 ft., 455 ft. in the Devonian limestone and 1,625 ft. below the top of the Madison.

Taber field: Western Oils, NW¼ 9-9-17w4, has location 3 miles southeast of Border Petroleum's producer.

Lethbridge: Lethbridge Petroleum 1, LSD 12, 11-8-22w4, deepening in hard formation below 3,385 ft.

Eastern Alberta

Steveville: Standard of British Columbia 2 Princess, LSD 3, 13-20-12w4, shut in waiting for bottom-hole choke to control gas-oil ratio. Standard 3 Princess, LSD 5, 13-20-12w4, finished at 3,260 ft., shut down waiting for recementing after testing over 300 bbl. daily when perforated between 3,195 and 3,205 ft. Unlike No. 2, which produced from the upper Madison, No. 3 gets production from a lower Cretaceous sand above the lime, apparently the Sunburst which developed gas in 1 Princess. This is believed to be the first crude production from the Sunburst sand in Alberta. Standard 4 Princess, LSD 13, 12-20-12w4, is below 2,872 ft. Standard 5, LSD 9, 14-20-12w4, is drilling. Standard 6, LSD 15, 12-20-12w4, is waiting for equipment.

Steveville Oil 1, LSD 5, 18-20-11w4, is below 2,494 ft. with surface casing set. Anaconda-Patricia 1, LSD 9, 31-20-12w4, is spudding. Princeville 1 is making location.

Wainwright: Montreal-Alberta Oil 1, LSD 2, 15-45-7w4, resuming from 4,600 ft.

British Columbia

Provincial Government 1, on Commotion Creek in the Peace River block, northern British Columbia, bottoming at 5,000 ft., is fishing for lost bit and drill rods. Test is believed 1,000 ft. above the potential oil horizon in the Peace River shales.

Conservation Terms Defined

R. E. Allen, chairman of the Petroleum and Natural Gas Conservation Board of Alberta, has issued a list of definitions of conservation terms as applied to the Alberta fields.

Conservation as applied to oil and gas resources is efficient production for beneficial use without avoidable waste.

Optimum rate of production is that flow which minimizes, per unit of production, the development of pressure differentials or declines, the release of gas from solution in the reservoir, the shifting of the gas cap, retrograde condensation in the reservoir and intrusion and encroachment of water, and results in maximum economic recovery.

A gas well is one yielding a product predominantly in the vapor phase under reservoir conditions. In Turner Valley "any well that for the 3 months immediately preceding has produced more than 50 per cent of its extractable content of liquid hydrocarbons in the form of a commercially recoverable natural gasoline with an overall gas-liquid hydrocarbon ratio of more than 50,000 cu. ft. per barrel."

An oil well is one yielding a product predominantly in the liquid phase under reservoir conditions. In Turner Valley "any well that for the 3 months immediately preceding has produced less than 50 per cent of its extractable content of liquid hydrocarbons in the form of commercially recoverable natural gasoline with an overall gas-liquid hydrocarbon ratio of less than 50,000 cu. ft. per barrel."

Ontario Completions

Middleton Township: Dominion Natural Gas Lot 24, Concession 4 STR, finished at 1,350 ft. with 35,000 cu. ft. a day.

Oneida Township: Union Gas 256, lot 10, West Plank Road, finished at 625 ft. with 15,000 cu. ft. a day.

Seneca Township: L. B. Mehlenbacker, Lot 8, Concession 3, finished at 575 ft. with 50,000 cu. ft. a day.

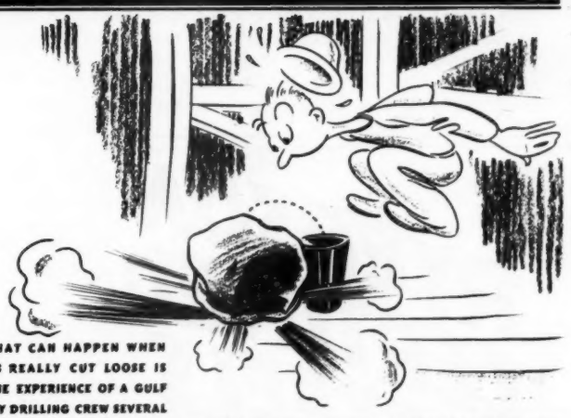
Walpole Township: Peacock Oil & Gas Syndicate, Secord farm, Lot 14, Concession 1, finished at 1,000 ft. with 95,000 cu. ft. a day.

West Oxford Township: Dominion Natural Gas, Thornton farm, Lot 5, Concession 2, finished dry hole at 775 ft.

Oil From Alberta Coal

EDMONTON, Alberta.—Dr. E. H. Boomer of the University of Alberta chemical department has announced that laboratory experiments have shown that an average of 150 gal. of gasoline per ton can be extracted from Alberta coal. Samples of Alberta coal were subjected to high pressure and high temperatures in a hydrogenation plant. Experiments are being continued in the National Research Council laboratories at Ottawa. Alberta coal reserves are estimated at 1,072,627,400,000 tons, representing a possible recovery of 160,894,110,000,000 gal. of gasoline.

It's a Fact — Johnston



SOME IDEA OF WHAT CAN HAPPEN WHEN NATURE'S FORCES REALLY CUT LOOSE IS ILLUSTRATED BY THE EXPERIENCE OF A GULF COAST OIL COMPANY DRILLING CREW SEVERAL YEARS AGO. WITH THE 8¼" WATER STRING SET, THE WELL WAS DRILLING NEAR THE 900-FOOT LEVEL WHEN A STRAY GAS SAND WAS STRUCK AND THE WELL BLEW OUT. SO GREAT WAS THE PRESSURE RELEASED THAT ONE OF THE ROCKS BLOWN FROM THE HOLE MEASURED TEN-AND-A-QUARTER INCHES AT ITS SMALLEST DIAMETER—AND THAT WAS TWO INCHES GREATER THAN DIAMETER OF THE CASING THROUGH WHICH IT WAS BLOWN. FIGURE THAT ONE OUT!

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"WHY SET CASING BEFORE YOU KNOW!"

A. P. I. Abstracts

(Continued from Page 26)

state was presented with the paper. Fifteen of the 34 are in the Big Injun sand, seven are in the Berea. No one sand is always suitable or unsuitable for secondary recovery. An example was cited in which the natural recovery was 2,530 bbl. per acre and the recovery by secondary methods was between 1,250 and 1,700 bbl. per acre.

Emphasis was placed on the point that in view of the per acre recoveries demonstrated, original oil wells should not be abandoned until secondary-recovery possibilities have been investigated. Another interesting point made was that secondary recovery is not now considered illegal in West Virginia. Until a few years ago the law was interpreted as barring secondary-recovery projects but the present interpretation holds it permissible.

●

Water Flood Used on Berea Sand in Chatham, Ohio, Pool

WILLIAM BYERS (Dymo Co., Spencer, Ohio)

THE Chatham pool extends due north and south in Chatham, Harrisville and Litchfield townships, of Medina County, Ohio. It is about 3½ miles in length and about 1 mile wide and has recovered from 2,000 to 5,500 bbl. per acre.

Description of sand.

The Berea is medium to fine grained, moderately hard, slightly argillaceous, often limy and light to brownish to bluish gray sandstone. Porosity runs from 16 to 18 per cent, saturation from 40 to 45 per cent and permeability averages from 44 to 113 millidarcys. The conditions are fairly comparable to the Bradford, Pa., field. Salt water is present throughout the sand body but there is no evidence of encroachment.

Development practice.

Water is obtained from shallow alluvial deposits, is none too plentiful and some requires very light treatment. Wells are completed in the conventional manner and are generally shot with about 1 qt. In the injection wells an ordinary flood packer is cemented at the top of the producing formation. Seamless steel 1½-in. pipe is used to inject the water. Producing wells are equipped with either 2 or 3-in. tubing. Oklahoma type pumping jacks are generally used. Well spacing is primarily designed to fit property line distances and vary from 300 to 350 ft. between water wells; the spacing pattern is usually square.

Operating practice.

Injection pressures are usually started with hydrosatic weight. Pressure at the well head is gradually increased until the desired maximum is reached. Where Berea sand is uniform in character in the Chatham field, from ⅛ bbl. to as high as 10 bbl. of water per foot of sand per day will be accepted. Producing wells are generally pumped 24 hr. per day but in some cases the wells are pumped intermittently. Band-wheel powers are used for the pumping.

●

Repressuring and Flooding Profitable in Illinois

A. H. BELL and FREDERICK SQUIRES (State Geological Survey, Urbana, Ill.)

VACUUM was introduced in Clark County in 1910, repressuring with gas and air in Crawford County in 1922 and water flooding in Crawford County in 1924. The use of gas has been commercially unsuccessful but flooding and repressuring have been and should continue to be profitable.

At present a majority of farms in the old fields are under vacuum. While the first application was highly successful, many of the subsequent installations have acted as a detriment.

In 1932, 77 of the 107 leases on which repressuring had been tried showed increased recoveries for 1 year or more. Total area affected by repressuring was 3,488 acres with production increases evident on 2,548 acres, or 75 per cent. Seventy-five per cent of the wells showed increases in production for a 5½-year period of 66 per cent. Total production of the wells was 1,111,392 bbl. against 668,440 bbl. which would have been obtained without repressuring.

The Robinson showed the largest percentage increase from repressuring. The average volume of air or gas used per barrel of increased production was 8,000 cu. ft. Good prospects are indicated for the very similar Bridgeport sand which covers about 6,000 acres. The Biehl sand in the Allendale field, Wabash County, gave 57 per cent increased recoverv for 3 years.

McClosky may be exception.

The McClosky lime produces from oolitic zones which are like sandstones in texture and this formation is a potential exception to lack of success in repressuring lime formations. The McClosky lime is continuously permeable over long distances, as much as 2 miles in one case. Permeability averages over 500 millidarcys and this is favorable for repressuring.

Tide Water Oil Co. started repressuring 750 acres in Crawford in 1926 with 18 wells of 162 being converted into input wells. The plant is operating at a profit after 15 years. As much as 1,000,000 cu. ft. per day has been injected with the average being 475,000 cu. ft.

In the new fields repressuring is operating at Louden, Centralia and Salem. At Louden there are 63 input wells through which 2,250,000 cu. ft. of gas are injected daily at 700 lb. pressure into the Cypress, Paint Creek and Bethel sands. This is a Carter Oil Co. project.

Gulf Refining Co. and Adams Oil & Gas Co. each operate a repressuring project in the Centralia field. Gulf injects 25,000 cu. ft. of Devonian gas into the Benoist sand at 75 lb. per sq. in. pressure. Adams is injecting 60,000 cu. ft. of gas at 280 lb. per sq. in. pressure.

At Salem the Texas Co. is returning 2,500,000 cu. ft. per day into the Benoist, Aux Vases, and McClosky at varying pressures on the sands through 32 wells.

Water flooding.

Interest in water flooding was aroused by observation of the results of natural and accidental floods and by the unusually large returns from pools which produced oil accompanied by large volumes of water. Accidental floods have produced more than 400,000 bbl. of oil up to 1936. At Allendale the flooding of the Biehl sand on five leases has been accompanied by considerable success. In several instances water has broken through the pipe permitting a 1,200-ft. column of water to stand on and feed into the oil sand. Such accidental flood projects have resulted in flood production of 58,000 bbl. of oil from nine flooded wells.

Appalachian Fields

(Continued from Page 113)

Morris Township: Carnegie 2 Nelan heirs, 2,978 ft.
Conger et al 1 C. W. Archer, 2,620 ft.
Union Gasoline & Oil Corp. 5 W. E. Craft, rigged up to spud.
North Strabane Township: Carnegie 1 George W. Devore, location.
Somerset Township: Equitable 1 Jerry Myers, gas sand 1,243 ft., gas gaging 119,000 cu. ft. at 1,261-66 ft., testing 1,271 ft.
Equitable 1 Colin Swagler, 3,030 ft.
South Franklin Township: Carnegie 1 Nelan heirs, location.
West Finley Township: Lucille Ackley et al 1 Lelia Ackley, 400 ft.

Westmoreland County

Bell Township: Peoples 1 T. D. Hines, 3,118 ft.
Dome Gas Co. 2 D. S. Carnahan, spudding 40 ft.
Washington Township: Peoples 1 John W. Ellwood, 2,742 ft.
Peoples 1 Asa Blose, tools stuck 2,070 ft.

Texas Panhandle

(Continued from Page 131)

Wheeler County

Magnolia 3 Koons, 97 bbl., pumping, 150-qt. shot, 2,427-55 ft.
Alma Oil 1 Welsh, show for est. 1,000,000 cu. ft. gas, plugged as failure, 2,340 ft., T.D.

SOUTHEAST NEW MEXICO WILDCAT REPORT

Chaves County

L. E. Elliott 1 State ..... NW NE 16-11-31
T.D. 3,915 ft.
Roxana Oil 1 Maull ..... NE NW 11-12-25
Setting 8¼-in. at 624 ft., last report.
A. F. Pierce 1 Franks ..... SE NW NW 17-9-5
T.D. 990 ft., P.B. 887 ft., shot 40 qt. 864-87 ft., testing.
Holmes-Martin 1 Stephens ..... C NW NE 22-15-29
Old well drilling deeper, T.D. 3,210 ft.
H. Steinberger 1 Headley ..... NW SW 26-14s-29e
T.D. 3,405 ft., sulfur water 3,400-5 ft.
R. T. Wilson 1 L. B. Brown ..... C NW SW 29-11-23
Drilling 1,485 ft.

Eddy County

V. S. Gearner 1 Friess ..... SE NW 9-21-29
Location.
Harry W. Long 1 Anderson ..... N½ 16-22-20
Location.
G. M. Cone 1 Hare ..... NW NW NE 11-16-28
Old well drilling deeper, T.D. 1,830 ft., showing est. 250,000 cu. ft. daily, testing.
Jack Harris 1 Josey ..... SW SE 19-20-23
T.D. 643 ft.
Jones & Yates 1 Everest ..... NE SE 15-18-26
270-qt. shot 1,934-84 ft., and 670-qt. shot 1,485-1,710 ft., set new casing, still testing.
Olen F. Featherstone 1 Johnson ..... SW SW 10-19-27
Location.
J. H. Rives 1 Boulter ..... SW SW SW 21-19-27
S.D. 960 ft.
Basin Oil 1 Kimmell ..... NE NE NE 5-20-26
1,620-ft. test, T.D. 505 ft., reaming casing.
W. A. Suddreth 1 N. H. Wills, 6 mi. W of Getty field, NW SE 14-20-28, gas sand 778-83 ft., tested 7,000,000 cu. ft. daily, trying to cement casing at 638 ft. after braden head blew off, gas volume increased to 11,000,000 cu. ft. daily, S.D. at T.D. 738 ft., prepare to take official gage.

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Tinsley Extended on Southeast As Production Reaches Peak

By GEORGE WEBER

JACKSON, Miss., Apr. 21.—The center of wildcatting interest shifted from South to West Central Mississippi last week, as a Stone County wildcat which had reported shows was abandoned, and a Sharkey County test tested oil and mud. Tinsley continues at peak development, but the east edge of the southeast extension area was again defined by a failure in the Woodruff sand. Extensions continue southward in the active area of the major oil field.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells	5	2,898	25,678
Dry holes	2	.....	13,594
Total	7	.....	39,272

Wildcats

H. I. Morgan 2 Dantzler Lumber Co. proved a disappointment last week and was abandoned at a total depth of 8,507 ft. The test, located in the Wiggins area, Stone County, was last week reported to have good shows of oil in the Eutaw formation between 7,240-7,308 ft. The section was not originally cored. so side-wall cores were taken at 7,248, 7,300 and 7,308 ft., recovering sand with an odor and slight stain of oil. Recovery was not sufficient to obtain samples for core analysis.

British American Oil Production Co. 1-A Houston Estate, Sharkey County wildcat, about 25 miles west of the Tinsley field, cored a show of oil in the Selma chalk formation at about 3,296 ft. A drill-stem test made at 3,281-96 ft. showed recovery of 120 ft. of oil-cut mud, with no report as to period of time the tool was open, sizes of chokes or working pressure. Operators were last reported coring ahead below 3,296 ft. An unauthenticated report was that they were preparing to set casing, with the hole bottomed at 3,305 ft. Operators are withholding information on the test. The Selma formation was topped at approximately 3,280 ft., so that the show is in the top of the formation.

Tinsley

Failure of Sylvan Petroleum Corp. 2-A Moore-Robertson marked the eastern limits of Woodruff production in the southeast extension area at another point last week. The well encountered 55 ft. of Woodruff section, but the oil-water table was estimated to be within 8 ft. of the top, and salt-water intrusion prevented the completion of a commercial well. Meanwhile, production is being pushed southward in the active sector, and with the testing of oil by W. B. Johnson 1 Stutts, another ½-mile extension was marked.

Tinsley production rose last week, to an average of 22,085 bbl. daily, as large volumes of the crude in storage were moved in an improved crude market.

MISSISSIPPI COMPLETIONS

Tinsley-Yazoo County

J. P. Evans 2 Dalzell Johnson ..... SW NE 31-10-2
1,320 bbl., ¼-in. choke, T.P. 190 lb., T.D. 5,098 ft., 7-in. casing 5,098 ft., perf. 4,978-5,015, 5,022-29 and 5,033-58 ft., Woodruff zone 4,977-5,059 ft.

Hassie Hunt 1 Sorrell ..... NE NE 31-10-2
40 bbl., ½-in. choke, T.P. 80 lb., T.D. 5,110 ft., 7-in. casing 5,095 ft., perf. 4,972-5,012 ft., Woodruff zone 4,970-5,050 ft.

Hassie Hunt and Carl Jones 1 Germany ..NE SE 19-10-2
768 bbl., ½-in. choke, T.P. 80 lb., T.D. 5,067 ft., 7-in. casing 5,046 ft., perf. 4,908-68 ft., Woodruff zone 4,906-5,012 ft.

Love Pet. Co. 2-A Germany ..... SE NE 30-10-2
410 bbl., 18/64-in. choke, T.P. 140 lb., T.D. 5,028 ft., 7-in. casing 5,027 ft., perf. 4,920-66 ft., Woodruff zone 4,922-5,016 ft.

Slick-Urschel Oil Co. 15 Slick Est. .... NW SE 35-11-3
Pumped 360 bbl., T.D. 5,478 ft., 5½-in. casing 5,425 ft., perf. 4,858-74 ft., Woodruff zone 4,855-85 ft.

Sylvan Pet. Corp. 2-A Moore-Robertson..SE NW 29-10-2
T.D. 5,087 ft., salt water, Woodruff zone 5,029-84 ft.

MISSISSIPPI DRILLING REPORT

Wildcat—Chickasaw County

Century Oil Co. 1-A Flaherty ... S½ SW SW 8-13s-3e
Drilled deeper from 2,340 ft.

Clarke County

Walsingham & Earles 1 School Land
SW NW NE 16-4n-15e
T.D. 4,057 ft., took side-wall cores 4,047-57 ft., report oil stain, preparing to run casing.

Grenada County

Grenada County Drilling & Dev. Co. 1 Connecticut General ..... NW SE 28-23n-5e
Drilling 2,825 ft.

Lauderdale County

Magnolia Pet. Co. 1 Culpepper ..... NW NE 4-8n-14e
Drilling 5,197 ft.

Marshall County

P. J. Lunati 1 fee ..... SW SE 31-3s-1w
No report, last reported drilling 1,965 ft.

Montgomery County

Henderson Oil Co. 1 School Land SE NW NE 16-9n-6e
Rigging up.

Sharkey County

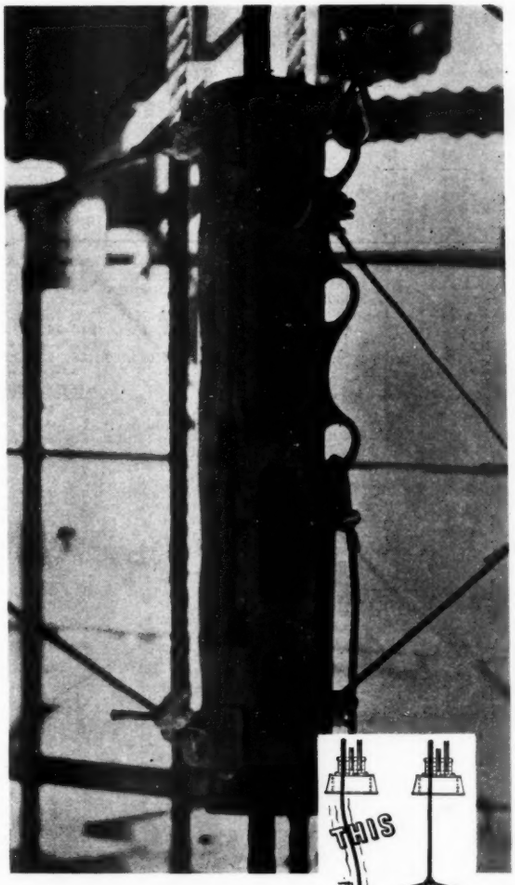
British American Oil Prod. Co. 1-A Houston .....
N½ NE SW 23-11-7w
Report show oil in Selma chalk, D.S. test 3,281-96 ft., recovered 120 ft. oil-cut mud, coring 3,296-3,305 ft.

Warren County

Waggoner Bros. Oil Co. 1 Parker .. NW NW 17-14n-1e
S.D. 7,013 ft., preparing to drill to 8,000 ft.

Wildcat—Stone County

H. I. Morgan 2 Dantzler Lumber Co. .NE SE 4-4s-10w
T.D. 8,507 ft., dry.



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Summary of Operations, All Fields for March

SUMMARY OF COMPLETIONS

District—	Comp	Oil	Prod.	Gas	Dry	Completions Under 1,000 ft.	1,000-2,500 ft.	2,500-5,000 ft.	5,000-10,000 ft.	Over 10,000 ft.	Footage	Drilling
Appalachian	390	320	754	59	11	9	343	33	5	0	722,334	496
Ohio	110	33	760	55	22	30	42	38	0	0	227,456	218
E. Kentucky	18	2	52	13	3	3	4	11	0	0	38,383	51
W. Kentucky	18	4	50	0	14	6	8	4	0	0	22,490	36
Michigan	52	14	850	3	35	1	42	9	0	0	95,167	115
Indiana	34	20	2,429	1	13	6	10	18	0	0	69,286	70
Illinois	182	130	22,481	0	52	8	70	104	0	0	441,466	360
Kansas	121	92	99,796	7	22	1	15	104	1	0	380,045	244
Nebraska	3	1	36	0	2	0	3	0	0	0	5,977	18
Missouri	0	0	0	0	0	0	0	0	0	0	0	4
Oklahoma	87	50	14,633	7	30	3	21	50	13	0	296,167	304
North Texas	143	84	18,084	1	58	36	45	55	7	0	376,389	233
W. Central Texas	44	19	2,060	3	22	14	20	10	0	0	84,951	69
N. West Texas	84	82	66,189	0	2	0	10	2	72	0	402,583	166
S. West Texas	68	60	58,569	1	7	3	11	52	2	0	219,948	143
Texas Panhandle	36	33	6,812	1	2	0	0	36	0	0	109,303	95
East Texas	71	61	7,415	3	7	0	0	64	7	0	290,137	109
E. Texas Border	3	0	0	3	0	0	0	1	2	0	15,069	4
Upper Gulf Coast	98	69	16,623	6	23	2	4	7	74	11	644,043	115
Lower Gulf Coast	48	35	4,914	2	11	0	0	13	32	3	286,905	87
S. Central Texas	14	9	1,538	0	5	4	7	3	0	0	24,726	50
South Texas	66	33	3,605	3	30	0	27	31	8	0	204,115	62
Southeast New Mexico	19	13	1,933	2	4	1	3	15	0	0	58,999	67
Arkansas	16	6	2,780	3	7	1	2	8	5	0	72,346	21
N. Louisiana	49	29	2,966	5	15	1	28	12	8	0	150,733	49
Louisiana Gulf	57	41	10,316	1	15	0	4	6	26	21	450,770	129
Mississippi	22	18	13,042	1	3	0	2	5	15	0	105,626	28
Alabama	0	0	0	0	0	0	0	0	0	0	0	4
Montana	11	6	993	2	3	1	3	7	0	0	26,845	57
Wyoming	12	10	7,809	0	2	3	1	4	4	0	39,344	69
Colorado	5	1	400	0	4	0	2	1	2	0	22,303	34
Utah	0	0	0	0	0	0	0	0	0	0	0	7
N. W. New Mexico	0	0	0	0	0	0	0	0	0	0	0	14
California	63	53	53,365	0	10	3	3	18	28	11	414,625	142
Total March	1,944	1,328	421,254	182	434	136	730	721	311	46	6,298,531	3,670
Total February	1,967	1,305	424,580	198	464	161	731	728	317	30	6,243,439	3,478
Difference	23	23	3,226	16	30	25	1	7	6	16	55,092	192

APPALACHIAN

Field—	Comp.	Oil	Prod.	Gas	Dry	Dlg.
Bradford	*240	*240	278	0	0	206
Allegany	*61	*61	83	0	0	45
N. Oriskany	3	0	0	2	1	9
Middle dist.	14	11	15	5	1	10
Butler-Armstrong	3	2	2	0	1	10
Southwest Penna.	17	1	20	12	4	63
West Virginia	49	5	356	40	4	153
Ttl. Mar.	390	320	754	59	11	496
Ttl. Feb.	389	295	395	67	27	482
Difference	1	25	359	8	16	14

*Includes water-intake wells.
Gas production, million cu. ft.: North Oriskany 2.6; Middle district 0.3.

OHIO

Ashland	3	1	3	1	0	10
Athens	7	0	0	7	6	15
Coshocton	2	0	0	0	2	5
Fairfield	2	0	0	2	0	3
Guernsey	2	0	0	0	2	5
Holmes	3	1	1	2	0	5
Knox	10	0	0	10	0	12
Licking	13	3	20	10	0	26
Medina	21	18	62	0	3	10
Meigs	6	0	0	5	1	8
Monroe	4	2	18	1	1	6
Muskingum	4	0	0	3	1	18
Noble	5	1	3	3	1	12
Perry	9	5	651	2	2	11
Stark	2	0	0	2	0	7
Tuscarawas	3	0	0	1	2	10
Washington	7	1	1	3	3	15
Wayne	2	0	0	1	1	8
Miscellaneous	6	1	1	2	3	32
Ttl. Mar.	110	33	760	55	22	218
Ttl. Feb.	96	17	541	55	24	214
Difference	14	16	219	0	2	4

EASTERN KENTUCKY

Magoffin	1	1	2	0	0	3
Knott	6	0	0	6	0	13
Floyd	4	0	0	4	0	13
Martin	1	1	50	0	0	9
Pike	3	0	0	3	0	21
Breathitt	1	0	0	0	1	0
Clark	1	0	0	0	1	0
Elliott	1	0	0	0	1	0
Miscellaneous	0	0	0	0	0	7
Ttl. Mar.	18	2	52	13	3	51
Ttl. Feb.	24	7	120	12	5	49
Difference	6	5	68	1	2	2

Production above gas wells, 5,254,000 cu. ft.

WESTERN KENTUCKY

	Comp.	Oil	Prod.	Dry	Gas	Dlg.
Christian	1	0	0	1	0	2
Daviess	6	1	15	5	0	10
Henderson	2	1	10	1	0	2
McLean	4	1	15	3	0	5
Muhlenberg	1	0	0	1	0	1
Ohio	3	1	10	2	0	7
Miscellaneous	0	0	0	0	0	8
Ttl. Mar.	18	4	50	14	0	36
Ttl. Feb.	20	6	430	14	0	33
Difference	2	2	380	0	0	3

MICHIGAN

Field—	Comp.	Oil	Prod.	Gas	Dry	Dlg.
Allegan	19	7	450	0	12	24
Arenac	2	1	90	0	1	8
Bay	1	0	0	0	1	2
Clare	1	0	0	0	1	12
Gladwin	1	1	30	0	0	1
Hillsdale	1	0	0	0	1	0
Isabella	4	0	0	2	2	6
Kalamazoo	1	0	0	0	1	1
Kent	3	0	0	1	2	4
Lenawee	2	0	0	0	2	2
Mason	1	0	0	0	1	1
Montcalm	3	0	0	0	3	3
Muskegon	1	0	0	0	1	1
Ottawa	5	4	240	0	1	8
Van Buren	7	1	40	0	6	7
Miscellaneous	0	0	0	0	0	35
Ttl. Mar.	52	14	850	3	35	115
Ttl. Feb.	76	28	10,532	3	45	104
Difference	24	14	9,682	0	10	11

INDIANA

Bowman	1	1	30	0	0	0
Cannelburg	1	0	0	0	1	1
Dodds Bridge	1	1	5	0	0	0
Griffin and South.	15	15	2,256	0	0	21
Heusler	1	0	0	0	1	0
Loogootee	1	0	0	1	0	0
Troy	1	1	1	0	0	1
Wildcat	13	2	137	0	11	38
Miscellaneous	0	0	0	0	0	9
Ttl. Mar.	34	20	2,429	1	13	70
Ttl. Feb.	25	13	1,853	3	9	75
Difference	9	7	576	2	4	5

ILLINOIS

Allendale	5	4	427	0	1	12
Bartelso	1	1	20	0	0	1
Benton	5	5	1,341	0	0	5
Boos	1	1	120	0	0	4
Boyleston	4	2	183	0	2	0
Clay City	3	1	2	0	2	1
Dahlgren	1	1	1,134	0	0	4
Dix	2	1	100	0	1	0
Dundas	3	2	129	0	1	5
Dupo	2	2	135	0	0	0
E. Calvin	19	15	2,377	0	4	30
Enterprise and West	6	5	411	0	1	5
Fairman	2	2	142	0	0	2
Griffin and South	3	3	361	0	0	1
Herald	1	0	0	0	1	0
Hoffman	1	1	13	0	0	0
Hoodville	12	11	2,910	0	1	28
Keensburg	1	1	35	0	0	0
Louden	14	11	1,274	0	3	9
Mason	6	6	744	0	0	1
Maud	1	1	225	0	0	3
McKinley	1	0	0	0	1	1
Mill Shoals	3	3	289	0	0	6
Mt. Carmel	15	15	2,067	0	0	27
New Harmony and N. & S.	8	7	2,201	0	1	39
Noble and North	2	2	100	0	0	0
Omaha	5	3	361	0	2	6
Patoka and East	11	11	906	0	0	6
Salem	1	1	54	0	0	29
Springerton	1	0	0	0	1	1
Storms	2	2	155	0	0	1
W. Irons	1	1	50	0	0	1
W. Liberty	7	7	4,070	0	0	9
Wildcats	32	2	145	0	30	94
Miscellaneous	0	0	0	0	0	29
Ttl. Mar.	182	130	22,481	0	52	360
Ttl. Feb.	210	145	23,702	0	65	330
Difference	28	15	1,221	0	13	30

KANSAS

Augusta	1	1	16	0	0	4
Beaumont	1	0	0	1	0	3
Bemis-Shutts	8	8	12,563	0	0	7
Big Creek and South	3	3	448	0	0	4
Bloomer	3	3	501	0	0	1
Bornholdt	3	2	105	0	1	2
Burnett	5	5	12,048	0	0	6
Burrton	1	0	0	0	1	3
Cairo	1	1	3,000	0	0	0
SW. Catherine (wildcat)	1	1	185	0	0	0
Chase and North	3	3	3,376	0	0	1
David	1	0	0	0	1	0
Douglas	1	0	0	0	1	2
Driscoll	1	0	0	0	1	0
Edwards	4	4	9,205	0	0	6
Feltes	1	1	3,000	0	0	3
Geneseo	7	7	9,083	0	0	6
Gibson (wildcat)	1	1	30	0	0	0
Gorham	1	1	692	0	0	1
Hall-Gurney	10	10	13,356	0	0	24
Hugoton	5	0	0	5	0	2
Jordan	2	2	3,024	0	0	1
Keesling	1	1	539	0	0	4
Keller	1	0	0	0	1	3
Kraft	3	3	324	0	0	7
Lost Springs	6	5	1,345	0	1	11
Penokee (wildcat)	1	1	216	0	0	0
Prusa	1	1	164	0	0	0
Raymond	2	2	3,380	0	0	4
Severy	2	1	20	0	1	2
Shaeffer (wildcat)	1	1	1,175	0	0	1
Silica	5	5	7,310	0	0	11
Stafford	1	1	411	0	0	1
Stoltenberg	2	2	2,331	0	0	4
Thrall	1	1	3,000	0	0	1
Trapp	3	2	765	0	1	7
Wilkins	6	5	3,039	0	1	5
Zenith	4	4	2,490	0	0	7
Misc.	6	4	2,625	1	1	69
Wildcats	11	0	0	0	11	31
Ttl. Mar.	121	92	99,796	7	22	244
Ttl. Feb.	112	84	102,820	3	25	191
Difference	9	8	3,024	4	3	53

OKLAHOMA

Allen	1	0	0	0	1	2
Altus	3	1	92	0	2	12
Cement	2	2	1,399	0	0	5
Chickasha	2	0	0	2	0	4
Cromwell and East	2	2	205	0	0	2
Cumberland	4	4	1,314	0	0	7
W. Davenport	1	1	57	0	0	0
Deep Fork	2	1	88	0	1	0
Dill	6	4	793	0	2	11
Doyle	1	0	0	0	1	1
Drumright	1	1	8	0	0	0
Enid	1	1	45	0	0	0
Fish	1	1	335	0	0	2
W. Frederick	1	1	1,766	0	0	2
Guthrie (wildcat)	1	1	2,444	0	0	3
Hazel	1	0	0	0	1	0
Healdton	2	0	0	0	2	1
Hewitt and West	10	10	2,674	0	0	28
Hobart	2	1	132	0	1	8
S. Konawa	1	0	0	0	1	0
Little River district	2	1	205	0	1	6
Lovell and South	2	0	0	2	0	3
Mannford	2	1	35	0	1	4
Okemah dist.	1	1	393	0	0	2
Okla. City	2	1	730	0	1	9
St. Louis	7	4	1,100	0	3	3
Seminole district	4	3	173	0	1	3
East Stroud	1	1	150	0	0	1
Tussey	1	1	45	0	0	3
Weleetka, West	1	1	125	0	0	2
Wewoka	1	1	60	0	0	1
Miscellaneous	4	1	45	1	2	124
Wildcats	14	3	220	2	9	54
Ttl. Mar.	87	50	14,633	7	30	304
Ttl. Feb.	103	51	14,657	16	36	244
Difference	16	1	24	9	6	60

NORTH CENTRAL TEXAS

NORTH TEXAS

Antelope	2	2	366	0	0	3
Archer	8	3	173	0	5	7
Benton & Holmes	2	2	675	0	0	2
Bonita	1	0	0	0	1	3
Bryson	4	4	901	0	0	5
Clay	4	1	68	0	3	11
Cooke	4	3	60	0	1	5
Fargo	2	2	675	0	0	4
Griffin	2	1	525	0	1	1
Harrold	1	1	750	0	0	3
Hull-Silk	7	7	3,055	0	0	27
K.M.A.	20	16	4,287	0	4	29
Montague	2	1	9	0	1	2
Olney	23	13	784	0	10	11
Ringgold	2	1	69	0	1	1
Rogers & Rogers	4	3	1,575	0	1	4
Seymour	3	3	854	0	0	4
T.C.U.	2	2	110	0	0	5
Voth	5	5	735	0	0	9
Walnut Bend	3	5	675	0	0	7
Wichita	6	4	178	0	2	9
Wilbarger	4	2	140	0	2	4
Young	3	1	75	1	1	9
Zwiefel	2	2	1,225	0	0	1
Wildcats	27	2	120	0	25	49
Miscellaneous	0	0	0	0	0	15
Subtotal	143	84	18,084	1	58	233

WEST CENTRAL TEXAS

Akard	1	1	292	0	0	1
Albany	2	2	25	0	0	2
Bangs	1	0	0	0	1	1
Bluff Creek	1	1	47	0	0	1
Carbon	1	1	125	0	0	4
Cook	2	1	102	0	1	2
Cross-Cut	1	0	0	0	1	1
Ghio	1	1	5	0	0	1
Hightower	1	0	0	0	1	1
Higgs	1	1	57	0	0	1
Loving	1	1	74	0	0	1
Lynch	1	0	0	0	1	1
Nail	1	1	13	0	0	1
Newell	1	1	39	0	0	1
Novice	2	2	134	0	0	5
Putnam	1	0	0	1	0	2
Santa Anna gas	1	0	0	1	0	2
Shackelford	1	0	0	0	1	4
Swastika	1	1	640	0	0	2
Strawn	1	1	10	0	0	1
Thrifty	1	0	0	0	1	0
View and South	2	2	260	0	0	2
Wildcats	18	2	237	1	15	23
Miscellaneous	0	0	0	0	0	9
Subtotal	44	19	2,060	3	22	69

Grand total:						
March	187	103	20,144	4	80	302
February	200	119	28,996	6	75	300
Difference	13	16	8,852	2	5	2

WEST TEXAS

NORTHERN WEST TEXAS

Deep Rock	1	1	1,212	0	0	0
Dodge	1	1	288	0	0	1
Dockery & Robbins	3	3	812	0	0	5
Seminole	11	11	6,178	0	0	26
Sharon	4	4	722	0	0	6
Slaughter-Duggan	37	36	35,456	0	1	75
Wasson	26	26	21,521	0	0	39
Wildcats	1	0	0	0	1	9
Miscellaneous	0	0	0	0	0	5
Subtotal	84	82	66,189	0	2	166

SOUTHERN WEST TEXAS

Abell	2	2	666	0	0	6
Estes	2	2	882	0	0	3
Fromme	1	0	0	0	1	1
Foster	5	4	5,576	0	1	6
Goldsmith and North.	6	6	6,293	0	0	14
Hutchins	1	1	246	0	0	2
Johnson	8	8	4,638	0	0	7
Jordan	3	3	2,349	0	0	5
Keystone	2	2	750	0	0	5
Kermit	1	1	409	0	0	1
McElroy	6	6	6,647	0	0	5

Field—	Comp.	Oil	Prod.	Gas	Dry	Dlg.
N. Cowden	5	5	3,128	0	0	5
O'Brien	4	4	1,779	0	0	4
Noelke	2	2	19,910	0	0	4
Pecos Valley	2	1	160	0	1	3
Sand Hills Permian	1	1	1,375	0	0	4
Shearer	1	0	0	0	1	0
South Magnolia-Sealy	1	1	160	0	0	1
Taylor-Link	1	1	85	0	0	2
Tobarg	3	3	107	0	0	2
Waddell	1	1	2,767	0	0	6
Ward	1	1	225	0	0	4
White & Baker	4	4	355	0	0	3
Wildcats*	5	1	62	1	3	24
Miscellaneous	0	0	0	0	0	26
Subtotal	68	60	58,569	1	7	143

*Heiner Ordovician discovery and Baldwin gas discovery.

Grand total:						
March	152	142	124,758	1	9	309
February	128	122	108,462	0	6	291
Difference	24	20	16,296	1	3	18

TEXAS PANHANDLE

Carson	5	5	878	0	0	16
Gray	14	12	2,033	0	2	29
Hutchinson	16	16	3,901	0	0	37
Moore	1	0	0	1	0	9
Wheeler	0	0	0	0	0	4
Ttl. Mar.	36	33	6,812	1	2	95
Ttl. Feb.	33	29	9,558	4	0	94
Difference	3	4	2,746	3	2	1

EASTERN TEXAS

East Texas:						
Longview	21	20	*901	0	1	15
Kilgore	16	16	*625	0	0	14
Joiner	5	5	*270	0	0	6
Chapel Hill	3	2	423	1	0	6
Hawkins	7	4	1,893	2	1	21
Long Lake	3	3	315	0	0	5
Richland	1	1	15	0	0	1
Pittsburgh	1	1	71	0	0	1
Talco	7	7	2,756	0	0	4
Techuacana	1	0	0	0	1	1
Wortham	2	2	146	0	0	2
Wildcats	4	0	0	0	4	24
Miscellaneous	0	0	0	0	0	9
Ttl. Mar.	71	61	7,415	3	7	109
Ttl. Feb.	63	52	5,424	1	10	72
Difference	8	0	1,991	2	3	37

*East Texas field production by hourly gage.

EAST TEXAS BORDER

Carthage	1	0	0	1	0	0
Joaquin	2	0	0	2	0	1
Smithland	0	0	0	0	0	2
Wildcats	0	0	0	0	0	1
Ttl. Mar.	3	0	0	3	0	4
Ttl. Feb.	8	1	36	2	5	10
Difference	5	1	36	1	5	6

TEXAS GULF COAST

Anahuac	3	3	1,186	0	0	2
Batson	2	2	28	0	0	1
Blessing	1	0	0	0	1	2
Caplen	1	0	0	1	0	1
Chenango	1	0	0	0	1	2
Esperson	3	2	676	1	0	3
Fannett	1	0	0	0	1	3
Fairbanks	1	1	150	0	0	1
Ganado	1	1	355	0	0	1
Hardin	1	1	157	0	0	1
Hillje	1	0	0	1	0	0
Hull	4	3	368	0	1	2
Humble	2	2	388	0	0	2
Joe's Lake	2	0	0	0	2	1
La Ward (Maubro)	2	2	528	0	0	1
Lolita	12	11	2,487	0	1	7
League City	1	1	338	0	0	1
Lockridge	1	1	337	0	0	1
Lovells Lake	1	1	8	0	0	1
Magnet	1	1	97	0	0	1
Markham	2	2	522	0	0	1
Navidad	1	0	0	1	0	0
N. Markham	1	1	185	0	0	1
Old Ocean	7	6	2,727	0	1	12
Red Fish Reef	4	3	287	0	1	4
Rowan	1	0	0	0	1	1
Sabine Pass	1	1	291	0	0	0
Segno	2	1	498	0	1	2
Sour Lake	2	2	142	0	0	0
S. China	2	2	272	0	0	1
Spurger	1	0	0	0	1	0
Thompson	2	2	289	0	0	3
Tom Ball	2	2	814	0	0	2
W. Ranch	10	9	2,378	1	0	12
W. Ganado	1	0	0	0	1	1
W. Columbia	3	2	810	0	1	2
Withers	6	4	305	1	1	5
Miscellaneous	8	0	0	0	8	34
Ttl. Mar.	98	69	16,623	6	23	115
Ttl. Feb.	97	77	21,500	2	18	112
Difference	1	8	4,877	4	5	3

LOWER TEXAS GULF COAST

Agua Dulce	4	4	687	0	0	8
Baffin Bay	1	0	0	0	1	0
Clara Driscoll	2	1	102	0	1	7
Coleta Creek	3	3	164	0	0	3
East Flour Bluff	1	1	132	0	0	2
East White Point	1	1	137	0	0	2
Fagan	1	1	65	0	0	1
Geneive	1	1	60	0	0	1
Heyser	1	1	5	0	0	1
La Gloria	2	0	0	2	0	5
La Rosa	1	0	0	0	1	0
McFaddin	1	1	70	0	0	1
Midway	2	1	120	0	1	5
Orange Grove	2	2	147	0	0	1
Richard King	3	3	332	0	0	1
Placedo	1	1	63	0	0	0
South Clara Driscoll	2	2	198	0	0	2
Stratton	7	6	1,288	0	1	8
Tom O'Connor	2	2	997	0	0	1
Victoria	1	0	0	0	1	1
Wade City	4	3	299	0	1	3
Weser	1	1	48	0	0	1
Miscellaneous	4	0	0	0	4	33
Ttl. Mar.	48	35	4,914	2	11	87
Ttl. Feb.	59	43	4,739	3	13	82
Difference	11	8	175	1	2	5

SAN ANTONIO DISTRICT

Bee Creek	2	2	770	0	0	2
Barst Creek	1	1	290	0	0	0
Elm Creek	1	1	2	0	0	3
Gas Ridge	2	2	5	0	0	3
Tenney Creek	3	3	471	0	0	3
Miscellaneous	5	0	0	0	5	39
Ttl. Mar.	14	9	1,538	0	5	50
Ttl. Feb.	15	8	585	0	7	48
Difference	1	1	953	0	2	2

LAREDO DISTRICT

Bridwell	1	1	199	0	0	2
Casa Blanca	1	1	60	0	0	0
Cedro Hill	3	1	52	0	2	0
Coie	1	1	50	0	0	0
Colorado	4	4	442	0	0	3
Charamousca	3	3	145	0	0	1
Glen	10	8	1,125	0	2	3
Hoffman	4	2	80	1	1	2
Holbein	1	1	111	0	0	1
Kelsey	5	3	428	0	2	3
Killam	1	0	0	0	1	2
Lopeno	1	0	0	1	0	0
North Rincon	2	1	64	0	1	1
Nichols	1	1	88	0	0	2
Oilton	1	0	0	0	1	0
Rincon	2	2	282	0	0	3
Randado	1	0	0	0	1	0
Rio Grande City	1	0	0	0	1	2
Sam Fordyce	1	1	67	0	0	2
San Salvador	1	1	150	0	0	0
Seven Sisters	1	0	0	0	1	0
Sun	1	0	0	0	1	2
White Creek	3	2	262	0	1	2
West Cole	1	0	0	0	1	0
Miscellaneous	15	0	0	1	14	31
Ttl. Mar.	66	33	3,605	3	30	62
Ttl. Feb.	63	33	4,440	4	26	65
Difference	3	0	835	1	4	3

MISSISSIPPI

Jackson	1	0	0	1	0	0
Tinsley	19	18	13,042	0	1	19
Wildcats	2	0	0	0	2	9
Ttl. Mar.	22	18	13,042	1	3	28
Ttl. Feb.	9	8	5,084	0	1	21
Difference	13	10	7,958	1	2	7

Gas production (million cu. ft.): Jackson 15.

SOUTHEAST NEW MEXICO

Field—	Comp.	Oil	Prod.	Gas	Dry	Dlg.
Dayton	1	1	85	0	0	2
Eaves	1	0	0	1	0	3
Grayburg	2	0	0	1	1	2
Jackson	1	1	108	0	0	1
Loco Hills	1	1	30	0	0	4
Maljamar	7	7	1,415	0	0	17
Red Lakes	1	0	0	0	1	1
Root	2	2	145	0	0	2
Shugart	1	1	150	0	0	2
Wildcats	2	0	0	0	2	11
Miscellaneous	0	0	0	0	0	22
Ttl. Mar.	19	13	1,933	2	4	67
Ttl. Feb.	15	12	4,784	1	2	69
Difference	4	1	2,851	1	2	2

ARKANSAS

Atlanta	1	1	720	0	0	0
Dorcheat	0	0	0	0	0	1
El Dorado	1	1	30	0	0	4
McKamie	3	0	*1,526	3	0	1
Nick Springs	2	1	300	0	1	1
Smackover	2	2	110	0	0	5
Stephens	1	0	0	0	1	1
Urbana	2	1	94	0	1	3
Wildcats	4	0	0	0	4	5
Ttl. Mar.	16	6	2,780	3	7	21
Ttl. Feb.	11	6	514	0	5	20
Difference	5	0	2,266	3	2	1

Gas production (million cu. ft.): McKamie, 11.86.

*Condensate from gas-condensate wells.

NORTH LOUISIANA

Caddo	11	10	260	0	1	11
Carterville	1	1	25	0	0	0
Converse	1	0	0	0	1	1
Cotton Valley	1	0	*202	1	0	2
Homer	2	2	64	0	0	0
Joaquin	2	0	0	2	0	0
Lisbon	2	0	*485	1	1	3
Little Creek	1	1	186	0	0	0
Monroe	1	0	0	1	0	3
Nebo	2	2	500	0	0	2
Olla	8	8	958	0	0	5
Sibley	1	0	0	0	1	0
Sligo	2	0	0	0	2	1
South Urania	2	1	30	0	1	0
Sugar Creek	2	1	174	0	1	2
Summerville	1	1	72	0	0	4
Urania	2	0	0	0	2	0
Miscellaneous	0	0	0	0	0	4
Wildcats	7	2	10	0	5	11
Ttl Mar.	49	29	2,966	5	15	49
Ttl. Feb.	41	24	2,557	6	11	43
Difference	8	5	409	1	4	6

Gas production (million cu. ft.): Cotton Valley 1.8, Joaquin 210 (open-flow potential), Lisbon 4.15, Monroe 5.

*Condensate from gas-condensate wells.

LOUISIANA GULF COAST

Anse La Butte	3	2	310	0	1	8
Bayou Blue	2	2	190	0	0	3
Bayou Bouillon	1	0	0	0	1	1
Bayou St. Elaine	1	1	195	0	0	1
Caillou Island	1	1	216	0	0	1
Chacahoula	1	1	340	0	0	3
Chalkley	2	2	513	0	0	2
Charenton	2	1	64	0	1	2
Darrow	2	1	143	0	1	1
Fausse Point	1	0	0	0	1	1
Gibson	1	1	192	0	0	0
Golden Meadow	6	6	1,700	0	0	6
Gillis	1	1	263	0	0	1
Grand Bay	1	1	132	0	0	2
Horseshoe Bayou	1	0	0	0	1	1
Kenilworth	1	1	41	0	0	0
Lake Salvador	2	2	877	0	0	1
New Iberia	2	1	162	0	1	2
N. Crowley	1	0	0	0	1	1
Paradis	1	1	844	0	0	1
Potash	1	1	731	0	0	1
Quarantine Bay	1	1	292	0	0	3
Section 28	1	1	16	0	0	1
S. Crowley	1	0	0	1	0	1
Sulphur	2	2	312	0	0	2
University	1	1	41	0	0	1
Venice	1	1	336	0	0	1
Ville Platte	6	6	1,466	0	0	12
West Bay	1	1	130	0	0	1
W. Cote Blanche	1	1	332	0	0	1
W. Hackberry	1	1	468	0	0	1
Miscellaneous	7	0	0	0	7	66
Ttl. Mar.	57	41	10,316	1	15	129
Ttl. Feb.	60	47	10,368	1	12	132
Difference	3	6	52	0	3	3

ALABAMA

Wildcats	0	0	0	0	0	4
Ttl. Mar.	0	0	0	0	0	4
Ttl. Feb.	1	1	0	0	1	2
Difference	1	1	0	0	1	2

UTAH

Ttl. Mar.	0	0	0	0	0	7
Ttl. Feb.	0	0	0	0	0	7
Difference	0	0	0	0	0	0

MONTANA

Field—	Comp.	Oil	Prod.	Gas	Dry	Dlg.
Bow and Arrow	1	0	0	0	1	0
Cedar Creek	1	0	0	1	0	4
Cut Bank	7	5	988	0	2	10
Kevin-Sunburst	1	1	5	0	0	16
Winifred	1	0	0	1	0	2
Miscellaneous	0	0	0	0	0	25
Ttl. Mar.	11	6	993	2	3	57
Ttl. Feb.	19	7	1,268	7	5	57
Difference	8	1	275	5	2	0

NORTHWEST NEW MEXICO

Ttl. Mar.	0	0	0	0	0	14
Ttl. Feb.	1	0	0	1	0	14
Difference	1	0	0	1	0	0

COLORADO

Adams	1	0	0	0	1	0
Huerfano	1	0	0	0	1	4
Park	1	0	0	0	1	0
Rio Blanco	1	1	400	0	0	5
Washington	1	0	0	0	1	0
Miscellaneous	0	0	0	0	0	25
Ttl. Mar.	5	1	400	0	4	34
Ttl. Feb.	6	4	27	1	1	35
Difference	1	3	373	1	3	1

WYOMING

Hidden Dome	1	0	0	0	1	0
Kirby Creek	1	0	0	0	1	2
La Barge	1	1	45	0	0	2
Lance Creek	3	3	944	0	0	7
Lost Soldier	3	3	1,170	0	0	2
Oregon Basin	1	1	600	0	0	3
Rock River	1	1	250	0	0	1
Wertz	1	1	4,800	0	0	4
Miscellaneous	0	0	0	0	0	48
Ttl. Mar.	12	10	7,809	0	2	69
Ttl. Feb.	10	9	8,351	0	1	76
Difference	2	1	542	0	1	7

CALIFORNIA

Aliso Canyon	1	1	1,410	0	0	2
Belridge, N.	1	1	352	0	0	3
Coalinga	8	7	15,774	0	1	17
Coles Levee	2	2	892	0	0	9
Dominguez	2	2	876	0	0	2
Greeley	2	2	2,505	0	0	5
Huntington Beach	2	2	1,962	0	0	4
Inglewood	1	1	1,850	0	0	1
Kern River	2	2	76	0	0	0
Kettleman N. Dome	2	2	606	0	0	8
Long Beach	1	1	110	0	0	2
McKittrick	3	2	860	0	1	2
Montebello	1	1	271	0	0	0
Mount Poso	1	0	0	0	1	2
Newhall-Potrero	1	1	1,356	0	0	2
Potrero	1	1	350	0	0	0
Paloma	1	1	800	0	0	0
Rio Bravo	4	4	6,144	0	0	3
Rosecrans	1	1	120	0	0	6
Strand	1	1	1,135	0	0	0
Tupman	1	1	1,424	0	0	1
Ten Section	4	4	8,514	0	0	4
Torrance	1	1	150	0	0	1
Union Avenue	1	0	0	0	1	0
Wilmington	9	9	1,827	0	0	10
Ventura Ave.	3	3	4,001	0	0	10
Wildcats	6	0	0	0	6	20
Miscellaneous	0	0	0	0	0	28
Ttl. Mar.	63	53	53,365	0	10	142
Ttl. Feb.	69	57	52,382	0	12	151
Difference	6	4	983	0	2	9

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Personal Paragraphs

W. A. REITER, geologist with Fohs Oil Co., addressed members of the Shreveport Geological Society recently on the subject "Notes on the Origin of Oil."

R. B. B. WRIXON, equipment engineer for the Shell group, left Los Angeles recently for New York where he plans to spend a short time at the Asiatic Petroleum Co. offices before returning to his company headquarters in London. Mr. Wrixon has been in the United States since the first of February studying American oil equipment and operating methods.

LON CRON, independent operator and drilling contractor of Houston, Tex., returned last week from Mexico where he purchased a large ranch near Silver City.

A. S. RITCHIE, Wichita, Kans., of McPherson Drilling Co., was guest speaker at the quarterly meeting of the Kansas Oil Scouts Association held at Wichita last Thursday night.

WALTER K. KOKERNOT, formerly with the Texas Railroad Commission, has resigned to enter the oil business. He was formerly also with Humble Oil & Refining Co., in the land and geologic department.

DONALD G. CLARK, of Gulf Oil Corp., now in the Office of Production Management, Washington, D. C., will be one of the speakers at the May meeting of the National Association of Purchasing Agents at Chicago.

S. A. WENGERD, scout for Shell Oil Co., Inc., and formerly engaged in the Seminole area of Oklahoma, has been transferred to the Texas Panhandle district, where he will work out of Amarillo, Tex. He replaces JIMMY TICHY, who was transferred to the Wichita Falls office of the company.

H. L. FARRAR, president; J. H. TUTTLE and R. C. STONER, vice presidents; B. W. LETCHER, secretary; G. J. O'Brien, treasurer; G. M. FOSTER, assistant secretary; A. K. STEVENSON, assistant secretary; H. C. JUDD, assistant treasurer and R. N. DREIMAN, assistant treasurer of Southern Counties Gas & Electric Co., were reelected to their respective offices at the annual meeting of the company held recently.

R. E. (BOB) BERING, president of Lincoln Petroleum Co. for several years, has resigned. FRANK L. WOOD, vice president and treasurer of the company for the past 12 years, has been elevated to president of the company.

WILLIAM S. LYTLE, Titusville, Pa., junior assistant geologist of the Pennsylvania Topographic and Geologic Survey, and a reserve officer of the United States Army, has been ordered to report to Carlisle Barracks for physical examination, preparatory to being assigned to active duty at Fort Bragg, North Carolina.

GEORGE BELCHIC, CHARLES G. LASKEY and FRED MOORE, oil and gas operators of Shreveport, La., are directors of the newly organized Harbor Oil Co. of Shreveport.

FRANK HUDSON, who has been chief Pacific Coast geologist for Shell Oil Co., Inc., for several years with offices in Los Angeles and San Francisco, Calif., has resigned to enter private practice.

DR. GEORGE D. LOUDERBACK, dean of letters and senior professor of geology at the University of California, has been obtained to give a series of lectures on geology and on engineering applications of geology at Texas A. & M. College.

MELVIN L. BARLOW, son of R. R. BARLOW, former purchasing agent of the Independent Oil and Gas Co. in Tulsa before the organization was acquired by Waite Phillips, is now instructor of petroleum geology at Taft Junior College, Taft, Calif.

BOB McCRACKEN and DARIS FULLER, two Pennzoil Co. employes at Oil City, Pa., were honored at a stag dinner last week on the eve of their departure from the employ of the company. Mr. McCracken has been drafted for the Army and Mr. Fuller has accepted other employment.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

Use of petroleum in the manufacture of artificial gas has been practically discontinued in California, according to late information.

Material is being shipped into the Osage oil field by contractors who have drilling work to do for oil-operating concerns, the latter having succeeded in obtaining leasehold rights in the territory through recent negotiations.

"Dollar Oil" is the slogan of California oil men. They are wearing buttons bearing that motto. Leading men in the California petroleum industry predict that the price of oil in that state will probably reach the dollar level by 1917.

20 YEARS AGO

In the new field at El Dorado, Ark., the Caddo Central Oil & Refining Co.'s big gasser, which was in flames for more than a week, is now making 15,000,000 cu. ft. of gas and 1,500 bbl. of oil.

American concerns that use Mexican crude in refining operations are viewing with alarm the growth of the movement to place a tariff duty on imported oil. A tariff wall would mean large losses to the refiners mentioned.

10 YEARS AGO

The committee of oil producers that have been working to find an outlet for all the oil produced in the northeastern part of Oklahoma announces it has at last found pipe-line connections for the remainder of the distress oil within these areas.

The Hobbs, N. M., pool is an example of the trend of modern petroleum and production engineering practice as applied to an area where there is large known oil reserve in the formation that is being retained there and brought to the surface in amounts equal to that district's share of the total production of oil for this country.

E. S. BLEECKER, chief geologist, Mene Grande Oil Co., sailed last week for Venezuela. He will probably spend 6 weeks in that country before returning to the United States.

THOMAS H. WORK, president of Nordon Oil Corp., Ltd., and other incumbent officers were reelected at the annual meeting of the company held recently.

ALFRED MEYER, president, and J. A. ASSHETON, director, Caracas Petroleum Co., Caracas, Venezuela, sailed for Venezuela Saturday on the Santa Rosa.

ED OWEN, newly elected president of the American Association of Petroleum Geologists, was honored guest at a special meeting of the South Texas Geological Society, San Antonio, Tex., last Friday.

E. G. (BERT) STARR, president of Universal Consolidated Oil Co., and other incumbent officers were reelected at the annual meeting of the company held recently in Los Angeles, Calif.

DR. F. B. PLUMMER, geologist with the Bureau of Economic Geology of the University of Texas, Austin, Tex., last Friday evening addressed the West Texas Geological Society at Midland on the subject, "New Light on the Geology and Structure of the Llano Uplift of Central Texas."

ARTHUR (TEX) HARVEY, Texas independent oil operator of Dallas, Tex., was honored by Palestine, Tex., business men at a banquet in Palestine April 17, celebrating the discovery of eastern Texas' latest Woodbine field, opened by the operator in Anderson County last week.

ALEXANDER DEUSSEN, consulting geologist at Houston, Tex., was made an honorary life member of the Houston Geological Society at last week's regular meeting.

JOHN E. MABEE, president of Mabee Oil & Gas Co., Tulsa, who has been ill in a Tulsa hospital for several days, has been returned to his home and is expected to be able to return to his desk soon.

RAY SEARS, HUGH GILLIES, ROBERT COCHRANE, HARLIE GILL, LEE ALWARD, M. MALONEY and TOM CORLETT have been elected directors of the Guardian Oil Co., Pouce Coupe, Alberta, Canada.

HARRY D. BELL, Breckenridge, Tex., North Texas district superintendent for Gulf Oil Corp., was honored recently at a company party in Wichita Falls, Tex., commemorating completion of 35 years of service with the company.

F. L. MARTIN, vice president, Sunray Oil Co., Tulsa, was elected to the board of directors of the company at the annual meeting of the stockholders of the firm in Wilmington, Del., last week. He was named to suceed C. I. McLaughlin, who died a while ago.

SHELDON CLARK, Chicago, Ill., vice president of Sinclair Refining Co., and chairman of the Illinois Athletic Commission, acting with his two associate commissioners, last week imposed the heaviest fine in the 15-year history of legalized boxing in that state against Gunnar Barlund, Finnish heavyweight.

O. W. KILLAM, independent operator of San Antonio, Tex., joined the citizens of the Laredo district in celebrating the twentieth anniversary of the discovery of oil in that district. It was Mr. Killam's 3 Hinnant which opened the old Mirando field in Zapata County, and attracted the attention of the oil fraternity to that district.

Thirty-Year Veteran

The 81 employes of the Texas Co. who received watches in recognition of 30 years of service with the company last week included H. W. Dodge, vice president and general sales manager, who attained that distinction despite the fact that he is only now in his fiftieth year.

H. W. DODGE

Mr. Dodge was born in Cameron, Tex., in 1891. His first affiliation with the Texas Co. dates back to 1904 when, during school vacation, he worked as a messenger boy at the company's general offices in Beaumont.

Mr. Dodge received his early education in Beaumont and in 1910 enrolled as a member of the first class as Rice Institute. A year later he entered the law school of the University of Texas and was admitted to the bar at Austin in 1913.

With the Texas Co., he advanced through various clerical positions and eventually was made a station auditor. He was transferred to Houston as a warehouse helper and then was promoted in succession to traveling salesman, agent, general assistant superintendent of the Houston sales district and superintendent of the Oklahoma district. He was then transferred to Houston as assistant to the lubricating assistant, territorial office.

When the former western territory of the sales department was created in 1922, Mr. Dodge was made manager of that territory. In 1925, he was made manager of the northern territory, sales department, and in 1929 became general sales manager. In April 1933 he was made vice president and general sales manager.

Mr. Dodge is fond of bridge and golf. He is married, has two children and resides in Bronxville, Westchester County, a suburb of New York City.

EUGENE M. CALLIS, president of the Petrol Corp., is enjoying a southern vacation in Sea Island, Ga.

ROBERT J. CAMPBELL, purchasing agent for the Lisbon-Iberia Oil Corp., at New Orleans, has been transferred to the company's offices at Houston, Tex.

ALFRED LAFFERTY, Bolivar, N. Y., a tool dresser for Messer Oil Corp., is in a Wellsville, N. Y., hospital with injuries received in an oil-field accident last week.

C. R. KERR has been made sales manager of the Bradford Oil Refining Co., Bradford, Pa. He will devote his attention chiefly to lubricating oil and greases.

A. W. BARBOUR, for several years associated with the Alberta Lands and Mines Department and the Alberta Conservation Board, Alberta, Canada, has joined the staff of the Becker Refineries in Turner Valley.

PAUL R. BISHOP, Lauck Petroleum Co., was in charge of the committee on arrangements for a meeting last week of the Petroleum Accountants Society of Kansas. The meeting was held jointly with the Mid-Continent Oil and Gas Association, at Wichita, Kans.

C. B. ROACH, geologist for the Shell Oil Co., Inc., at Lake Charles, La., presented a paper on "The Subsurface Study of the Jennings Dome, Acadia Parish, Louisiana," at the regular monthly meeting last week of the South Louisiana Geological Society.

F. R. SCHMEIDER, of Shell Oil Co. of California, gave a short address at the April meeting of the Houston Chapter of Nomads. He discussed Brazil, and further discussed the different practices of the various oil companies today with reference to the types of equipment in use in various parts of the country.

G. W. McCULLOUGH, superintendent of the gas and natural-gas department, Phillips Petroleum Co., was elected chairman for 1942 of the Southwestern Gas Measurement Short Course at the University of Oklahoma. He succeeds RAY ROUNDTREE, superintendent of gas measurement, United Gas Pipe Line Co.

Shifts: JOSEPH A. HEALY, manager, land department, Belcher Production Co., from Galveston, Tex., to Miami, Fla.; M. E. ROBERTS, geologist, Pure Oil Co., from Midland, Tex., to Fort Worth, Tex.; AL JOHNSTON, superintendent, Lisbon-Iberia Oil Corp., from Baton Rouge, La., to University, La.; LEO RANNEY, president, Ranney Oil Mining Co., from Columbus, Ohio, to Morro Bay, Calif.; H. E. HELDRETH, superintendent, H. K. Heldreth & Son, from Dexter, Iowa, to Harrisville, W. Va.; CARL E. MAGNUSON, geologist, Shell Oil Co., Inc., from Stroud, Okla., to Perry, Okla.; H. J. SUMMY, superintendent, Sinclair Prairie Oil Co., from Arp, Tex., to Fort Worth, Tex.; LOUIS O. STORM, engineer, Shell Oil Co., Inc., from Iowa, La., to White Castle, La.; J. W. MENHALL, drilling contractor, from Centralia, Ill., to Benton, Ill.

T. F. THOMPSON, president, and GEORGE E. PHOENIX, vice president, have resumed their former positions with Worth Refining Co., Inc., Blue Island, Ill.

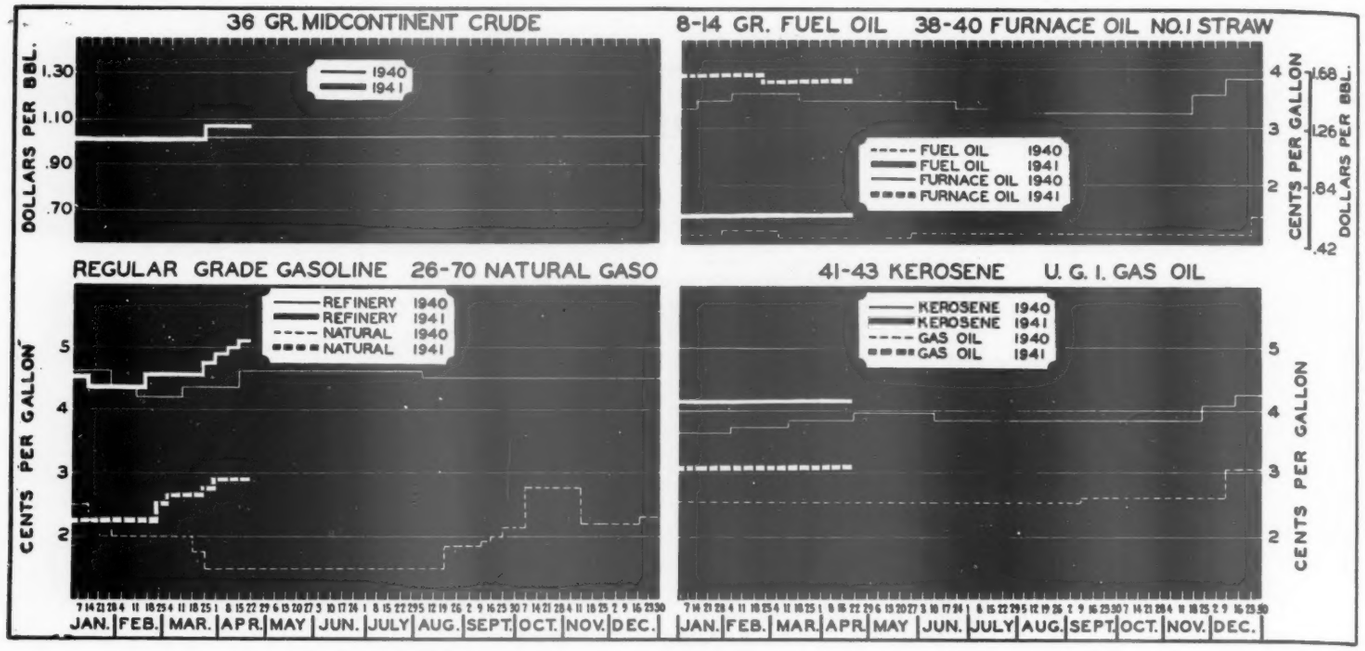
A. E. "OLLIE" HERMANN, president of Herrogan Oil Corp., Amarillo, Tex., has been elected president of the Panhandle Producers and Royalty Owners Association, which met in Amarillo.

WILLIAM MUIR, a former refinery operator in Titusville and Warren, Pa., and well-known figure in the oil industry of Pennsylvania, celebrated his ninetieth birthday anniversary at St. Petersburg, Fla., last week. The occasion was marked by a dinner party attended by a few intimate friends and members of the immediate family.

L. B. PENHALLOW has been promoted to sales assistant manager of the industrial department of Wadhams division of Socony-Vacuum Oil Co., Inc., at Milwaukee, Wis. Mr. Penhallow has been associated with the company for the past 10 years.

L. P. GARRETT, vice president of the Gulf Oil Corp., Houston, Tex., was the principal speaker at the annual employes dinner of the Gulf Refining Co. in Shreveport, La., recently. The dinner was held under the management of JOE T. GOODMAN, general agent for the company in the Shreveport office.

PAUL G. BLAZER, president, Ashland Oil & Refining Co., Ashland, Ky., will address a conference meeting of the National Resources and Defense Division of the U. S. Chamber of Commerce, to be held during the twenty-ninth annual meeting of the chamber April 28-May 1. Mr. Blazer's topic will be "Importance of an Integrated Industry."



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Upward Drive of Mid-Continent Oil Market Sustained by Advances

By H. STANLEY NORMAN

DRIVE of Mid-Continent refinery-gasoline prices into higher ground was sustained this week. The fourth consecutive weekly advance of ⅛ cent per gallon was registered in tank-car prices for all grades of motor fuel, lifting Mid-Continent quotations to a range of 5⅛ to 5¼ cents per gallon on 72-74 octane material.

Despite the latest increase which represents an accumulative advance of ½ to ⅝ cent per gallon in the Mid-Continent tank-car price since the movement started in the latter part of March, the market is extremely tight for this season. Buyers are meeting difficulty in locating material that can be purchased on a spot-market basis.

Many Refiners Sold Up

Oklahoma, Kansas, Arkansas, and North Texas refineries which normally supply the necessary material to spot buyers are sold up for remainder of April and several will be cut off the market until the middle of May or later. Contract customers of most all Mid-Continent refiners are placing shipping instructions against the maximum quantities specified in their supply agreements and are combing the market for unattached material.

Attitude of Mid-Continent refiners was expressed last week at Hot Springs, Ark., during the annual meeting of the Western Petroleum Refiners Association. Practically all plant operators were optimistic about the market outlook. The long-term prospects are even more encouraging than immediate aspects of the market. Still, the agreement of automobile manufacturers reached at Washington, D. C., last week, in consultation with government officials, to reduce production of 1942 model cars by 20 per cent may have an unfavorable reaction in the summer of 1942. Manufacturers estimate that 1,000,000 fewer automobiles will be produced between August 1, 1941, and the fall of 1942 than this year.

Indications are that the Mid-Continent refinery-gasoline market has not yet reached a static ceiling. Anticipations of additional advances are based on the contention that the base prices existing before the upward movement started in March had sunk to the lowest point in recent years. Even with advances that have developed during the past 4 or 5 weeks the tank-car price is still considerably under the average for 1937 and only slightly higher than the 1938 average. In contrast to the price of 4⅝ cents per gallon existing at this time a year ago, the current quotation of 5⅛ to 5¼ cents represents a net market improvement of ½ to ⅝ cent.

Refined Oil Market Barometer

Improvement in refined-oil markets continued this week in most manufacturing centers. Residual fuel oils were advanced 10 cents along the Atlantic seaboard and 5 cents per barrel in the Gulf Coast primary market. Mid-Continent refinery-gasoline prices were advanced another ⅛ cent per gallon sustaining a series of three previous similar increases.

MID-CONTINENT: Distillate-type fuels in firm demand.

GULF COAST: Demand strong for 68-octane gasoline and residual-fuel oil.

CALIFORNIA: Fuel oil growing stronger. Gasoline soft.

PENNSYLVANIA: Neutrals scarce at higher prices.

CHICAGO: Buying pressure applied to gasoline and fuel oils.

The current-market position is even more encouraging to refiners when it is considered that the intensive motoring season does not start in most sections of the country until the latter part of May after school terms have ended.

Supply Outlook Tight

Refiners who regularly purchase part of their commitments in the open market to provide for the summer bulge in demand are concerned over their ability to obtain supplies later, during the peak of this season's consumption. Even at the top figure in the current range of quotations, purchasers in the spot market have been unsuccessful in driving out supplies from storage or current production.

Of course, some of the current buying efforts are based on anticipated demand later in the summer but purchases are mostly for prompt shipment. On the other hand, jobbers in the middle western states are disinclined to extend purchases materially beyond immediate requirements because the reduction in freight rates scheduled for June will tend to lower costs on supplies delivered in subsequent months.

Strength of the Mid-Continent market is not confined to gasoline. Refiners report strong interest in kerosene, tractor fuels and residuals. There have been no recent changes in quotations for the distillate-type fuels but the lighter grades are in more active demand, reflecting the consumption from agricultural districts in the middle western and northern states.

Natural-gasoline quotations are firm at 2⅞ cents for 26-70 grade in the Oklahoma and Kansas (Group 3) market. Texas producers are quoting 2½ cents per gallon for the base grade but the market there appears to be slightly softer than in Oklahoma and Kansas.

Residual Fuel-Oil Prices Raised 10 Cents Along Atlantic Coast

By J. P. O'DONNELL

NEW YORK, Apr. 21.—Bunker C fuel oil, the last of the major oil products in the East Coast market to reflect the increased transportation rates and higher crude-oil prices, was advanced by major suppliers along the eastern seaboard last week. A blanket increase of 10 cents per barrel was put into effect. The advance was initiated by the Standard Oil Co. of New Jersey April 17 when it put its price up to $1.35 to be followed immediately by other companies.

The $1.35-per-barrel price is now in effect at all North Atlantic ports from Portland to Norfolk. Prices at South Atlantic ports range from $1.25 per barrel at Tampa, Fla., to $1.30 at Jacksonville and Savannah, Ga. Gulf Coast prices have been advanced 5 cents to 85 cents per barrel.

The spot-market increase was of comparatively minor importance in itself since only a small proportion of the total residual fuel-oil business is done on other than contract basis. However, it is given significance as a probable indication of what is to be expected when contracts come up for renewal. The bulk of current contracts specify a maximum price of $1.25 and are effective until July 1. New contracts are expected to witness the establishing of a substantially higher maximum.

Another feature of the market is the consistency of improvement in lubricating-oil prices. Further increases, affecting Pennsylvania neutral stocks, were made during the week. It was reported that 25 pour, 200-viscosity neutral is being held for 25 to 26 cents and 150-viscosity material for 23 cents, up 1 cent in each instance from the going price at the end of the previous week.

Demand for high-viscosity neutrals has been so strong that this material is reported to be virtually unobtainable. Increased export business is an important factor in tightness of the current situation. Strength in the lubricating-oil market has not been limited to neutrals for both bright and steam-refined lube stocks are reported to be tightly held. Bright stock, 25 pour, is still quoted at 16 cents, unchanged from the previous week, but there are reports of an increase of 1 cent in the price of 650 steam-refined stock and an increase of ½ cent in 600-flash material. Accordingly these are now quoted at 10 to 13 and 10 cents per gallon, respectively.

The wax market, which has been slowly inching upward during recent weeks, also continues strong with no material reported available at less than 3¼ cents per pound. Recent strength is particularly evident in the higher-melting-point grades although it has been extended to 122-4 material also. Fully refined grades remain unaffected by the improvement in crude-scale wax, according to reports.

The contraseasonal improvement in heating oil which was inaugurated the first week in April, continued when major suppliers in the New York Harbor area advanced spot-market quotations to 4.7 cents last week, another raise of 0.2 cent. The total advance in the spot-market price for No. 2 heating oil in this area in the past 2 weeks is now ½ cent. It has brought current quotations to within 0.2 cent of the past season's high.

Lack of bottoms for coastwise shipping had been a contributing factor to the strength of light fuel oil, though tanker rates again remained unchanged. Tanker rates are still quoted at 50 to 57 cents per barrel for both crude and refined products. Demand for bottoms has not been sufficient to bring higher rates, indicating that the prediction of the trade that boat prices would be held at no higher than present levels was well founded. According to reports, practically no tankers are available for either late April or May loading. Whether or not this will have an adverse effect on Gulf prices as it did during the past winter remains to be seen.

Likewise contributing to improvement in light fuel oil is the decline in East Coast storage. Stocks of distillate fuel were reported down to 7,190,000 bbl. on the East Coast on April 12 in contrast to 9,909,000 bbl. on March 15, a reduction of more than 2,700,000 bbl. in less than a month. In the same period residual fuel-oil stocks actually increased from 8,649,000 bbl. to 8,897,000 bbl.

Kerosene was also advanced 0.2 cent last week, bringing the New York Harbor quotation up to 5 cents per gallon. Socony-Vacuum Oil Co., Inc., advanced tank-wagon postings in metropolitan New York to 7.7 cents for kerosene and to 6.5 cents for Mobilheat on April 16. Current postings on kerosene in the North Atlantic area now range from 4.75 cents at Philadelphia to 5.2 cents at Portland.

Gasoline prices were up again last week following the widespread advances of the previous week. However, motor fuel in the 72-74-octane range was advanced 0.25 cent at Philadelphia and Baltimore early in the week to match current postings in New York Harbor. New York, Baltimore and Philadelphia prices now constitute the Atlantic seaboard low with prices elsewhere ranging up to the 6.75 cents quoted at Portland, Me., and at several South Atlantic ports.

As was freely predicted, another 0.25 advance in the New York Harbor price was made early this week. These advances are based on the higher Gulf Coast prices which are now reported to be only ⅝ to ½ cent under North Atlantic quotations. This margin is insufficient in view of tanker rates averaging 1¼ cents per gallon.

Gulf Refiners Advance Bunker Fuel-Oil Prices

HOUSTON, Tex., Apr. 22.—Prices of heavy fuels and diesel oils were at advanced levels on the Gulf Coast this week. Prices of gasolines, kerosenes and light fuel oils, although not increased, maintained gains made during the last several weeks. Bunker C grade fuel oil was sold at 85 cents, an increase of a nickel over a week ago, and in line with this, practically all suppliers moved their quotations to that level. A 5-cent increase also was posted for Bunker C fuel in ships' bunkers. Diesel-oil bunkers also were raised 5 cents.

Demand for heavy fuels showed a substantial improvement with a number of important inquiries for material being circulated.

Gasoline prices were maintained despite a comparatively quiet week of trading. Few actual spot sales were recorded, and most of the calls for material were for 68-octane-grade gasoline. Refiners are blending aviation-grade gasoline with low-octane gasoline to produce the 68-octane gasoline.

No kerosene is being offered below 3⅜ cents. Demand for kerosene has not been active but there is not much material available. Light fuels meeting No. 2 specifications continued firm at 3¼ cents.

Shortage of tankers for movement of material in coastwise trade to the Atlantic seaboard is being felt acutely by Gulf Coast refiners. Tanker rates have been reduced but without available tankers, these refiners are unable to benefit.

A.P.I. Weekly Refinery Statistics

Week Ended April 19, 1941

	Capacity reporting (per cent)	Total gasoline stocks (bbl.)	Residual fuel-oil stocks (bbl.)	Gas oil and distillate stocks (bbl.)	Daily crude runs (bbl.)
East Coast	100.0	21,411,000	8,659,000	7,208,000	536,000
Appalachian	91.0	3,270,000	451,000	372,000	131,000
Ind., Ill., and Ky.	90.2	18,423,000	3,001,000	2,254,000	554,000
Okla., Kans., and Mo.	76.9	8,646,000	1,966,000	1,197,000	280,000
Inland Texas	59.6	2,245,000	1,396,000	322,000	128,000
Texas Gulf	89.2	15,298,000	6,555,000	4,985,000	928,000
Louisiana Gulf	97.6	3,382,000	2,219,000	1,059,000	137,000
N. Louisiana and Ark.	51.5	586,000	586,000	302,000	52,000
Rocky Mountains	56.0	1,689,000	475,000	152,000	61,000
California	87.3	16,074,000	68,698,000	10,059,000	564,000
Total reported	86.2	91,024,000	94,006,000	27,910,000	3,371,000
Est. unreported	.....	6,875,000	1,630,000	500,000	334,000
*Est. total	.....	†97,899,000	95,636,000	28,410,000	3,705,000
*Est. total previous wk.	.....	98,654,000	95,471,000	28,381,000	3,630,000
*April 20, 1940	.....	103,617,000	102,590,000	24,356,000	3,535,000

*Bureau of Mines. †Includes 6,839,000 bbl. aviation gasoline.

Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATE)

Week ended April 12, 1941	265,160,000 barrels
Week ended April 5, 1941	265,540,000 barrels
Week ended April 13, 1940	252,269,000 barrels

Figures do not include stocks of heavy, unrefinable California crude.

RETAIL OIL MARKETS...

Tank-wagon and filling-station prices on gasoline and kerosene furnished by larger marketing firms

Prices as of April 22, 1941

Taxes

The gasoline quotations given in the following tables include the 1½-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Dlr.	Incl. tax	Kero. tank wag.
Chicago, Ill.	15.1	13.1	4.5	10.0
Decatur	15.1	13.6	4.5	8.5
Joliet	16.1	14.6	4.5	10.0
Peoria	16.1	13.7	4.5	10.0
Quincy	15.9	14.4	4.5	9.8
Davenport, Ia.	16.1	14.6	4.5	10.0
Des Moines	15.9	14.4	4.5	9.8
Mason City	16.3	14.8	4.5	10.2
Duluth, Minn.	16.9	15.4	4.5	10.8
Mankato	16.5	15.0	4.5	9.5
Minneapolis	16.5	14.7	4.5	10.4
LaCrosse, Wis.	17.5	16.0	5.5	10.4
Green Bay	17.9	16.4	5.5	10.8
Milwaukee	17.3	15.8	5.5	10.2
Detroit, Mich.	15.1	13.6	4.5	8.1
Grand Rapids	15.4	13.9	4.5	9.1
Saginaw	15.4	13.9	4.5	9.1
Evansville, Ind.	17.1	14.9	5.5	9.8
Indianapolis	17.3	15.3	5.5	10.0
South Bend	17.3	15.8	5.5	10.0
Fargo, N. D.	18.7	17.2	5.5	11.6
Huron, S. D.	18.0	16.5	5.5	10.9
Kansas City, Mo.	15.4	12.4	4.5	8.6
St. Louis*	15.2	13.7	4.5	9.6
St. Joseph	15.4	13.5	4.5	8.4
Wichita, Kans.	14.3	12.8	4.5	7.2

***State tax 2 cents, 1-cent city tax, and 1½-cent federal tax. †Does not include 4-cent state tax. ‡Does not include 3-cent state tax.**

Exclusive of state general sales taxes.

Discounts to commercial consumers. On purchases per month off tank-wagon prices: 1,000 gal. or more, 1.5 cents off, minimum delivery 25 gal.

Stanolex Fuel Oil in Chicago

Effective Apr. 18, 1941, f.o.b. Chicago, tank-wagon prices: Standard heater oil, 1-99 gal., 8.75 cents; 100-149 gal., 7.75 cents; 150 gal. and over, 7.25 cents. Stanolex fuel oil No. 1, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7.25 cents; 400 gal. and over, 6.75 cents. Stanolex furnace oil, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7.25 cents; 400 gal. and over, 6.75 cents. Stanolex fuel oil A, 1-99 gal., 7.5 cents; 100-399 gal., 6.5 cents; 400-749 gal., 5.5 cents; 750 gal. and over, 4.75 cents. Stanolex fuel oil B, 1-99 gal., 7.5 cents; 100-399 gal., 6.5 cents; 400-749 gal., 5.5 cents; 750 gal. and over, 4.75 cents. Stanolex Bunker C fuel oil, 1-399 gal., 6.0 cents; 400-999 gal., 5.0 cents; 1,000 gal. and over, 4.0 cents.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Cons'r tank wag.	Dlr. vided dlr.	Incl. tax	Kero. tank wag.
Ohio points	16.0	15.0	5.5	*9.0

***Includes state tax of 1 cent.**

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Cons'r tank car	Dlr. tank wag.	Incl. tax	Kero. tank wag.
Atlantic City	11.60	12.80	4.5	7.6
Newark	11.60	12.80	4.5	7.6
Annapolis, Md.	12.85	14.35	5.5	9.5
Baltimore	12.25	13.75	5.5	8.0
Cumberland	13.65	15.15	5.5	10.0
Washington, D.C.	10.50	12.00	3.5	9.0
Danville, Va.	14.45	16.95	6.5	9.75
Norfolk	13.25	15.75	6.5	9.5
Petersburg	13.55	16.05	6.5	10.5
Richmond	13.55	16.05	6.5	10.5
Roanoke	14.75	17.25	6.5	10.0
Charles'n, W. Va.	14.05	16.55	6.5	11.5
Parkersburg	13.35	15.85	6.5	11.2
Wheeling	14.35	15.40	6.5	11.8
Charlotte, N. C.	16.40	16.50	7.5	10.1
Hickory	16.95	18.45	7.5	10.0
Mt. Airy	16.80	16.00	7.5	10.7
Raleigh	16.15	17.00	7.5	10.0
Salisbury	16.45	15.50	7.5	10.4
Charleston, S. C.	14.25	16.75	7.5	9.25
Columbia	15.10	17.60	7.5	(*)
Spartanburg	15.80	18.30	7.5	(*)

Price basis to Essolene undivided dealers: Dealer tank-wagon price less 0.5 cent per gallon. Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at a time by hose connection, on yearly purchases: From 2,500 to 100,000 gal., consumer tank-wagon price at time and place of delivery: 100,000 gal. per year, consumer tank-car price plus 0.5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less 0.5 cent per gallon.

Effective January 16, 1939, in North Carolina the commercial consumer schedule became as follows: Single deliveries of 50 gal. or more, consumer tank-wagon price. Single deliveries of less than 50 gal., 4 cents per gallon over consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price, less 0.5 cent per gallon. The above policy also applies in South Carolina, effective January 23, 1939.

*Kerosene business of the company at these points now exclusively handled by dealers.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline Cons'r tank wag.	Net dlr.	Incl. tax	Kero. tank wag.
Atlanta, Ga.	17.0	17.0	7.5	10.0
Augusta	17.0	17.0	7.5	9.5
Macon	17.0	17.0	7.5	9.0
Savannah	16.0	16.0	7.5	9.0
Birmingham, Ala.	17.0	17.0	8.5	8.0
Mobile	17.5	17.5	9.5	8.0
Montgomery	18.5	18.5	9.5	10.0
Jackson, Miss.	16.5	16.5	7.5	9.0
Vicksburg	16.0	16.0	7.5	8.5
Jacksonville, Fla.	17.0	17.0	8.5	8.0
Miami	17.0	17.0	8.5	8.0
Pensacola	17.5	17.5	9.5	8.0
Tampa	17.0	17.0	8.5	8.0
Lexington, Ky.	16.0	16.0	6.5	9.0
Covington	14.0	14.0	6.5	9.0
Louisville	15.5	15.5	6.5	8.5
Paducah	16.0	16.0	6.5	8.5

Price basis to tank-wagon consumers, effective January 4, 1937, 3 cents per gallon below tank-wagon price.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax, and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon: Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent. All are included in the table.

Pennsylvania and Delaware

ATLANTIC REFINING CO.

	Gasoline Cons'r tank car	Dlr. tank wag.	Incl. tax	Kero. tank wag.
Philadelphia, Pa.	12.5	13.5	5.5	9.5
Pittsburgh	13.0	15.0	5.5	10.5
Allentown	13.0	14.5	5.5	10.5
Erie	12.5	15.0	5.5	10.0
Scranton	13.0	14.5	5.5	10.5
Altoona	13.0	15.0	5.5	10.5
Dover, Del.	...	14.0	5.5	10.5
Wilmington	...	13.5	5.5	10.0

Price basis to undivided dealers, dealer tank-wagon price less 0.5 cent per gallon.

Discount on kerosene, 2 cents per gallon off tank-wagon price on tank-wagon deliveries of 25 gal. or more at one time.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank truck	Serv. sta.	Incl. tax	Kero. tank wag.
San Francisco	16.5	17.5	4.5	11.5
Los Angeles	16.0	17.0	4.5	10.0
Fresno, Calif.	17.5	18.5	4.5	12.5
Phoenix, Ariz.	20.5	21.5	6.5	*17.5
Reno, Nev.	19.5	20.5	5.5	13.5
Portland, Ore.	19.0	20.0	6.5	13.5
Seattle, Wash.	19.0	20.0	6.5	13.5
Spokane	20.5	21.5	6.5	16.5
Tacoma	19.0	20.0	6.5	13.5

***Includes 5-cent state tax.**

Discount to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents. To commercial consumers: On tank-wagon price; on single deliveries of 40 gal. and over, advance quantity discount extended at time of delivery, 3 cents. Service-station schedule applies on single deliveries less than 40 gal. On kerosene in tank-car, transport-truck, and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank wagon.

March 18, 1939, split dealer discount was canceled.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline Cons'r tank car	Dlr.* tank wag.	Incl. tax	Kero. tank wag.
Albany	13.9	14.1	5.5	7.4
Met. New York	13.0	13.4	5.5	7.5
Buffalo	13.5	13.7	5.5	8.0
Rochester	14.2	14.4	5.5	8.6
Syracuse	14.0	14.2	5.5	8.5
Portland, Me.	13.5	14.5	5.5	7.7
Manchester, N. H.	14.6	14.5	5.5	8.7
Burlington, Vt.	14.9	15.1	5.5	8.0
Boston, Mass.	12.1	12.7	4.5	7.7
Worcester	13.1	13.3	4.5	7.7
Hartford, Conn.	13.3	13.5	4.5	7.0
New Haven	13.0	13.2	4.5	7.3
Providence, R. I.	12.1	13.2	4.5	7.5

*Undivided.

Effective August 8, 1940, the company changed its commercial consumer policy in New York and New England to the following:

Full compartment deliveries: Accounts buying less than 20,000 gal. annually, 0.5 cent above the commercial-consumer price; accounts buying from 20,000 to 120,000 gal. annually, commercial-consumer price; accounts buying 120,000 gal. annually and above, 0.25 cent off consumer price. Split compartment deliveries: Delivery of less than a full compartment, 250 gal., commercial-consumer price plus 1 cent. Steel-barrel deliveries: Commercial price plus 3 cents.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Incl. tax	Kero. tank wag.
Denver, Colo.	14.0	5.5	10.5
Grand Junction	17.5	5.5	12.0
Pueblo	14.0	5.5	9.0
Casper, Wyo.	16.5	5.5	11.5
Cheyenne	15.5	5.5	11.0
Billings, Mont.	17.5	6.5	12.0
Butte	16.5	6.5	13.0
Great Falls	16.5	6.5	12.0
Helena	16.5	6.5	12.5
Salt Lake, Utah	17.0	5.5	14.0
Boise, Idaho	†19.6	6.5	16.0
Twin Falls	†20.6	6.5	16.5
Albuquerque, N. M.	*17.0	7.0	9.5
Roswell	*15.0	7.0	8.0
Santa Fe	‡17.5	7.5	9.5

*Includes city tax of 0.5 cent. †Includes toll-bridge tax of 1 mill. ‡Includes city tax of 1 cent.

Tank wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Cons'r tank car	Dlr. tank wag.	Incl. tax	Kero. tank wag.
New Orleans, La.	14.25	16.75	8.5	‡10.0
Baton Rouge	14.75	17.25	8.5	‡10.5
Alexandria	14.75	17.25	8.5	‡10.5
Lafayette	15.00	17.50	8.5	‡10.0
Lake Charles	14.75	17.25	8.5	‡10.0
Shreveport	14.00	16.50	8.5	10.0
Knoxville, Tenn.	18.00	20.00	8.5	12.5
Memphis	15.00	17.00	8.5	10.5
Chattanooga	17.50	17.35	8.5	12.0
Nashville	17.00	17.50	8.5	10.0
Bristol	18.25	18.25	8.5	12.0

Essolene at dealer price less 0.5 cent per gallon to undivided dealers.

‡Includes 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gal. or more in one territory take posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gal. at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less 0.5 cent per gallon. Kerosene prices include 1-cent state tax.

Effective February 24, 1939, the company reestablished in New Orleans the commercial consumer policy on motor fuel effective in the rest of the state.

Effective December 12, 1938, the company revised its commercial consumer policy on motor fuel in New Orleans, as follows: Single deliveries of less than 50 gal., consumer tank car plus 2 cents per gallon 50 to 199 gal., consumer tank car plus 1 cent per gallon; 200 gal. and over, consumer tank car plus 0.5 cent per gallon.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Incl. tax	Kero. tank wag.
Texarkana, Ark.	13.5	5.5	6.0
Fort Smith	13.5	5.5	6.5
Little Rock	16.75	8.0	8.0
Muskogee, Okla.	13.00	5.5	7.0
Oklahoma City	12.00	5.5	7.0
Tulsa	12.50	5.5	7.0

Tank wagon represents price to consumers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank wag.	Dlr.	Incl. tax	Kero. tank wag.
Omaha	17.9	16.4	6.5	9.8
McCook	17.5	14.9	6.5	8.5
Norfolk	18.0	16.4	6.5	9.9
North Platte	18.3	16.5	6.5	10.2
Scottsbluff	17.9	15.5	6.5	9.5

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective January 1, 1935.

Texas

	Gasoline Tank wag.	Serv. sta.	Incl. tax	Kero. tank wag.
Dallas, Tex.	11.5	15.5	5.5	6.0
Fort Worth	11.5	15.5	5.5	7.0
Houston	12.0	16.0	5.5	8.0
San Antonio	12.5	17.0	5.5	8.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank wagon*
Oleum spirits	16.2
V.M.&P. naphtha	16.5
Cleaners' naphtha	15.5
Stanisol	15.5

*Prices include 3-cent Illinois tax but not 1-cent federal tax nor 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gal. lots if covered by contract.

Canada*

3-Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Gasoline Tank wag.	Incl. tax	Kero. tank wag.
Halifax, N. S.	24.5	10.0	18.0
St. John, N. B.	24.5	10.0	18.0
Montreal, Que.	24.0	8.0	16.5
Toronto, Ont.	24.5	8.0	17.0
Hamilton, Ont.	24.5	8.0	17.0
Winnipeg, Man.	27.5	7.0	22.5
Brandon, Man.	28.0	7.0	22.5
Regina, Sask.	25.0	7.0	20.0
Saskatoon, Sask.	20.8	7.0	22.8
Edmonton, Alta.	25.9	7.0	20.0
Calgary, Alta.	23.0	7.0	18.0
Vancouver, B. C.	21.0	7.0	23.0

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon prices. Discount to undivided dealers, 1 cent below tank-wagon price. In Maritime Provinces both divided and undivided dealers pay tank-wagon price.

Tank-Wagon Changes

Standard Oil Co. (Indiana), effective April 18, made a general revision in its Chicago fuel-oil prices, providing for increases of 0.25 to 1.5 cents per gallon, excepting that largest consumers of some grades now pay previously quoted prices. The company advanced gasoline prices 0.5 cent to tank-wagon consumers and dealers in Detroit and Grand Rapids, Mich., effective April 17.

Standard Oil Co. of New Jersey advanced tank-wagon prices of No. 2 and No. 3 fuel oil 0.5 cent per gallon in the states of Delaware and Maryland, excepting Baltimore, effective April 11. The company advanced the tank-wagon price of No. 1 fuel oil 0.3 cent per gallon in North Carolina April 11. No. 2 fuel oil was advanced 0.3 cent at all North Carolina points the same day, except Hickory, N. C., where the increase

(Continued on Page 159)

PRICES OF REFINED PRODUCTS...

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of April 22, 1941
(Most prices in cents per gallon)

The quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents a gallon on lubricating oils. Octane ratings in Middle West, Mid-Continent, and Southwest are based on A.S.T.M. method of testing.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.05⅛	.05¼
63-66 octane	.04⅞	.05
60 octane and below	.04¼	.04½
60-62 400 grades:		
72-74 octane (regular)	.05⅛	.05¼
63-66 octane	.04⅞	.05
60 octane and below	.04¼	.04½

NORTH TEXAS—

U. S. Motor grades:		
72-74 octane (regular)	.05	.05¼
63-66 octane	.04¾	.05
60 octane and below	.04¼	.04½
60-62 400	.04¼	.05¼

NORTH LOUISIANA (Ark. and N. La. delivery)—

U. S. Motor grades:		
72-74 octane (regular)	.05	.05¼
63-66 octane	.04¾	.05
60 octane and below	.04¼	.04½

ARKANSAS (Ark. and N. La. del.)—

U. S. Motor grades:		
72-74 octane (regular)	.05	.05¼
60 octane and below	.04¼	.04½

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.05⅛	.05¼
63-66 octane	.04⅞	.05
60 octane and below	.04¼	.04½
60-62 400 grades:		
72-74 octane (regular)	.05⅛	.05¼
63-66 octane	.04⅞	.05
60 octane and below	.04¼	.04½

PENNSYLVANIA (inland refineries)—

74-76 octane (regular)	.06	.06¼
72-74 octane	.05¾	.06

CALIFORNIA (domestic movement)—

58-60 400, 65 oct. and higher	.05½	.07
54-58 U. S. Motor	.04¾	.06¼

EAST COAST (domestic)—

U. S. Motor grades:		
New York (Bayonne)*	.06¼	.06½
Philadelphia	.06	.06¾
Boston	.06½	.06¾
Baltimore	.05⅞	.06
Charleston, S. C.	.06½	.06¾

*All grades of gasoline ⅛ to ¼ cent less for barge shipments. New York Harbor prices are for New York and New England delivery. Prices for New Jersey delivery ¼ cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
72-74 octane (leaded)	.05	.05¼
70-72 octane (unleaded)	.05⅛	.05¼
68-70 octane (unleaded)	.05	.05⅛
Below 68 octane (unleaded)	.04¾	.05

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.02⅞
Grade 18-55	.03⅜	.03½

NORTH TEXAS—

Grade 26-70		.02½
Grade 18-55	.02⅞	.03

CALIFORNIA—

75-85 375-390	.04½	.05¼

NORTH LOUISIANA (Ark. and N. La. delivery)—

Grade 26-70		.02½

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 i.b.p., 110-flash, 540-550 e.p.	.03½	.03⅝
41-43 gr., 300-320 i.b.p., 110-125 flash, 500-520 e.p.	.03⅝	.03¾
46-48 gr., 210-230 i.b.p., 480-max., e.p.	.03⅞	.04

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

42-44	.04¼	.04½
41-43	.04⅛	.04⅜

NORTH TEXAS—

41-43	.04	.04⅛

NORTH LOUISIANA (Ark. and N. La. delivery)—

41-43	.04	.04⅛

ARKANSAS (Ark. and N. La. del.)—

41-43	.04	.04¼

PENNSYLVANIA (inland refineries)—

46	.05½	.05⅝
45	.05⅛	.05¼

CHICAGO (Based on Group 3)—

42-44	.04¼	.04½
41-43	.04¼	.04⅜

CALIFORNIA (Pac. Coast market)—

38-40 high-burning test	.04½	.05½

NEW YORK (Bayonne, N. J.)—

41-43	.048	.05

GULF COAST (domestic)*—

41-43		.03⅜

*Barge price ⅛ cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.03⅞	.04⅛
No. 1 prime white, 38-42	.03¾	.04
No. 1 straw, 38-40	.03¾	.04
No. 2 straw, 32-36	.03⅝	.03½
No. 3 zero to 10, 28-32	.03¼	.03⅜

NORTH TEXAS—

No. 1 prime white, 38-42	.03¾	.03⅞
No. 1. straw, 38-40	.03¾	.03⅞

NORTH LOUISIANA (Ark. and N. La. delivery)—

No. 2, 32-36	.03½	.03⅝

ARKANSAS (Ark. and N. La. del.)—

No. 2, 32-36	.03⅜	.03½

CHICAGO (Based on Group 3)—

Range oil	.03⅞	.04⅛
No. 1 prime white, 38-42	.03¾	.04
No. 2 straw, 32-36	.03⅜	.03½
No. 3 zero to 15, 28-32	.03¼	.03⅜

NEW YORK (Bayonne, N. J.)—

*No. 1	.048	.050
*No. 2		.045
*No. 3		.045

*Barge deliveries ⅛ to ¼ cent under above tank-car price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil, under 35	.03⅛	.03¼
No. 5, low pour point, 18-22	.75	.80
No. 6, 15 and above, 8-14	.70	.75

NORTH TEXAS—

U.G.I. gas oil, under 35	.03	.03⅛
No. 5, low pour point, 18-22	.75	.80
No. 6, 15 and above, 8-14	.65	.70

NORTH LOUISIANA (Ark. and N. La. delivery)—

10-14 fuel oil, industrial		.70

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.03⅛	.03¼
No. 5, low pour point, 18-22	.75	.80
No. 5, 15 and above, 18-22	.70	.80
No. 6, low pour point, 10-16	.70	.80
No. 6, 15 and above, 8-14	.70	.75

PENNSYLVANIA (inland refineries)—

38-40	.04½	.05

CALIFORNIA—

Los Angeles:

30-40 gas oil, per bbl.	1.10	1.25
24 plus diesel, per bbl.	1.10	1.25
24 plus diesel (bunkers)	1.20	1.35
12-16 (bunkers at tidewater)	.65	.75
10-16 (cargo lots)	.65	.75
12-17 (tank cars)	.60	.85
10-17 (high sulfur)	.45	.60
San Joaquin Valley:		
10-18 (tank cars)	.50	.70
24 plus diesel, per bbl.	1.10	1.25
San Francisco:		
24 plus diesel, per bbl.	1.35	1.40
24 plus diesel (bunkers)	1.40	1.50
10-16 (bunkers)	.75	.80

GULF COAST—

No. 2 fuel		.03¼
43-47 diesel	.03¼	.03⅜
48-52 diesel	.03⅜	.03⅝
53-57 diesel	.03½	.03⅞
58-and-above diesel	.03⅝	.03¾
Diesel bunkers		1.40
Bunker C (bulk cargoes)		.85
Bunker C (bunkers)		.85

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil		.044
28-30 diesel (lighterage 6¼c per bbl.)		1.75
28-30 diesel (tank cars)		.045
Bunker C (to ocean-going ships in N. Y. Harbor)		1.35
Industrial fuel (tank cars)	.03¼	.03½

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

200-210 D, 10-25		.19
150-160 D, 0-10		.14½
150-160 D, 10-25		.14
100-110 D, 0-10		.14
100-110 D, 10-25		.13½
Steam refined:		
600 dark green (untreated)		.08

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):

10 pour point		.18½
15 pour point		.17½
25 pour point		.16
Steam refined:		
600	.09½	.11
650	.09½	.13
600 flash	.10	.12
630 flash	.11	12

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

0-10 pour point:		
150-3		.08½
180-3		.09
200-3		.09
250-3		.10½
280-3		.11
280-4		.10½
300-3½		.11½
350-3½		.12
400-3½		.12½
500-3½		.13
600-3½		.13½
100-2½ paraffin oil 10-25		.05¼
10-25 pour point:		
200-3		.08½
250-3		.10
280-3		.10½
280-4		.10

CALIFORNIA (moving to dom. market)—

Pale oils:		
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07¼	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11½
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11½
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11½
900-6½ plus	.09¼	.11½

GULF COAST—

Pale oils:		
100-3	.05¼	.05¼
200-3	.07¼	.07¼
300-3	.07¼	.07¾
500-3½	.08¼	.08½
750-3½	.08⅝	.08⅝
1,200-3½	.08¾	.08⅞
2,000-4		.09
3,000-4		.10½
Red oils:		
200-5-6	.06⅞	.07
300-5-6	.07¼	.07½
500-5-6	.08	.08¼
750	.08⅝	.08½
1,200-5-6	.08½	.08⅝
100-2½-3	.07¼	.08

PENNSYLVANIA—

150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pour point		.26½
10 pour point		.25½
15 pour point		.24½
25 pour point		.22
200 vis., at 70° F., 3 color:		
Zero pour point		.28½
10 pour point		.27½
15 pour point		.26½
25 pour point		.24

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (A.m.p.) w.c. scale	.03	.03⅛

PENNSYLVANIA (inland refineries)—

122-124 (A.m.p.) w.c. scale		.03¼
124-126 (A.m.p.) w.c. scale		.03¼

NEW YORK—

Wax in bags fully refined:	
125-127 (A.m.p.) wax	.0560
128-130 (A.m.p. wax	.0560
130-132 (A.m.p.) wax	.0585
133-135 (A.m.p.) wax	.0615
135-137 (A.m.p.) wax	.0640
Crude scale:	
124-126 (A.m.p.) w.s.	.03¼
124-126 (A.m.p.) y.s.	.03¼
Petrolatum in barrels, carload lots:	
Dark green	.02500 .02625
Amber	.02375 .02875
Extra amber	.02625 .03250
Lily white	.04375 .05125
Snow white	.05125 .06125
Cream	.03375 .04125

Export Prices

GASOLINE

GULF COAST—

60-62 400	.04⅛	.05⅛
61-63 390	.04⅛	.05¼
64-66 375	.04⅛	.05¼

LOS ANGELES—

U. S. Motor grades:		
Above 69 octane	.05½	.05⅝
65-69 octane	.05¼	.05⅛
60-65 octane	.04⅛	.05

KEROSENE

GULF COAST—

41-43 water white	.03⅝	.03⅛

LOS ANGELES—

41-43 water white	.05	.05¼

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.o.s. in bbl.)—

Cylinder stocks:	
600 S.R. unfiltered	.18
630 S.R. unfiltered	.18¼
600 flash, S.R.	.18⅛
650 flash, S.R.	.20
Bright stock:	
Light, 25 pour point	.22

NEUTRAL OIL

200-3 color	.31
150-3 color	.28½

PARAFFIN WAX

NEW YORK (prices per lb.)—

123-125 A.m.p.	.0500
125-127 A.m.p.	.0560
128-130 A.m.p.	.0585
133-135 A.m.p.	.0615
135-137 A.m.p.	.0640
Crude scale:	
124-126 w.s.	.03¼
124-126 y.s.	.03¼

MARKET RECORD OF ACTIVE OIL STOCKS . . .

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1941 High	1941 Low	Week ended Apr. 19 High	Low	Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1940	Com. sh. earn. 1939	1938	1940 High	1940 Low	1939 High	1939 Low
52	44	47½	46½	46½	Amerada Corp.	788,675	N.P.	50cQ	4-30-41	$2.00	$1.56	$2.07	58½	38½	74½	50
24¼	20¾	23¾	22⅞	22½	Atlantic Refining	2,663,999	$25	25cQ	3-15-41	1.00	1.66	1.40	27⅛	18¼	24¾	18⅛
10½	7½	8	7½	7½	Barber Asphalt Co.	390,223	$10	25c	5-21-40	.50	1.39	—.85	16⅝	8½	21	10¼
9⅝	7⅝	8½	8⅛	8⅛	Barnsdall Oil Co.	2,558,779	$5	15c	3-10-41	.60	.76	1.26	13⅜	7⅛	19½	11¼
6¼	5¼	5½	5¼	5¼	Consolidated Oil Corp.	13,751,726	N.P.	12½cQ	2-15-41	.72½	.55	.55	8⅛	5½	9⅞	6½
20¼	17⅜	20⅛	19	20	Continental Oil of Delaware	4,682,572	$5	25cQ	3-31-41	1.00	1.35	1.10	25	16⅛	31½	19¾
4½	3½	3¾	3½	3½	Houston Oil	1,098,618	$25	....	10-17-30	....	.43	.83	6⅞	3⅜	9⅝	4½
11⅜	9¾	10	9⅝	10	Lion Oil Refining	435,815	N.P.	25cQ	4-15-41	1.00	1.50	2.09	14⅜	9	18⅛	10
15½	13	14½	14¼	14⅜	Mid-Continent Petroleum	1,857,912	$10	40c	6-2-41	.80	1.42	.56	17⅜	11½	18	11⅛
11	9⅜	10⅜	9½	10⅜	Mission Corporation	1,378,645	$10	25c	12-20-40	.25	.87	1.04	11⅜	7⅛	14⅞	8¾
6⅝	4⅜	4¾	4⅜	4½	National Supply	1,155,517	$10	....	12-22-37	....	—.87	—.79	9¾	4⅝	15½	5⅝
8⅜	6¾	7½	7¼	7⅜	Ohio Oil Co.	6,563,377	N.P.	25c	12-14-40	....	—.10	.25	8¾	5⅜	10½	6
7¾	5½	7	6⅝	6⅝	Pacific Western Oil	1,000,000	N.P.	40c	12-19-39	....	.81	1.22	8⅞	5½	11⅞	7
10	7¼	9	9	9	Pan American Pet. Trans.	4,702,945	$5	25c	12-21-40	.25	1.10	.08	10½	6¾	8¾	5
41¼	35¾	39¼	37¼	38⅛	Phillips Petroleum	4,449,052	N.P.	50cQ	3-1-41	2.00	2.21	2.03	41¾	27⅛	46½	31¼
16⅞	14⅜	14⅜	14	14⅝	Plymouth Oil Co.	1,038,633	$5	30c	3-31-41	‡1.30	2.38	2.59	22¾	15	24	17⅛
9⅛	7	8⅝	7¾	7¾	Pure Oil Co.	3,982,031	N.P.	25c	12-20-40	.25	1.11	.38	11½	6¾	11¾	6⅛
9	7¼	8¼	8⅛	8¼	Richfield Oil Corp.	4,010,000	N.P.	50c	12-21-40	.50	.65	.51	9¼	5⅞	10¼	6⅝
15⅝	12½	..	..	..	Seaboard Oil of Delaware	1,244,383	N.P.	25cQ	6-14-41	1.00	1.40	1.52	20	11	24⅜	15½
13⅛	10⅛	13⅛	12⅜	12⅝	Shell Union Oil	13,070,625	N.P.	50c	12-20-40	.75	.77	.72	13⅛	7⅝	17¼	9⅞
24½	18⅞	24½	22⅝	23¾	Skelly Oil	995,349	$15	50c	12-20-40	1.25	1.99	2.27	23¼	12¼	29½	15½
9½	8¼	8¾	8¼	8½	Socony-Vacuum	31,206,071	$15	25cSA	3-15-41	.50	1.10	1.29	12½	7⅛	15⅛	10¼
21¼	17⅞	20⅜	19⅜	19⅞	Standard Oil of California	13,003,953	N.P.	25cQ	3-15-41	1.00	1.38	2.22	26⅛	16¼	33⅝	24¼
28¾	25½	28¼	27¼	27¾	Standard Oil (Indiana)	15,272,020	$25	25c	3-15-41	1.50	2.23	1.82	29	20¾	30	22¾
36½	33	35⅞	34¼	35	Standard Oil of New Jersey	27,280,998	$25	75c†	12-16-40	1.75	3.26	2.86	46½	29⅞	53½	38
39	34¼	36¼	34⅝	34⅝	Standard Oil of Ohio	753,740	$25	37½c	3-15-41	2.00	6.64	1.81	41¾	26¼	32¾	17
58¾	50	51½	50	51	Sun Oil	2,434,863	N.P.	25cQ§	3-15-41	•1.00	2.74	1.07	65⅞	46¾	66	45¾
1¾	1⅜	1¾	1½	1½	Superior Oil Corp.	1,388,979	$1	10c	12-28-40	.10	.04	.24	2½	1⅛	3⅝	1⅜
40¼	34½	37¾	36⅜	36½	Texas Corp.	10,876,139	$25	50cQ	4-1-41	2.00	3.02	2.13	47⅝	33	50¾	32½
3⅜	2⅞	3¼	3⅛	3⅛	Texas Gulf Producing Co.	888,147	N.P.	10c	12-14-40	.20	.69	.86	4¼	2½	5¾	3¼
6¼	5¼	5⅞	5⅝	5⅞	Texas Pacific Coal & Oil	888,236	$10	10c	3-1-41	.40	1.00	1.16	8⅝	5⅜	11⅜	7
10½	9⅜	9¾	9½	9½	Tide Water Associated	6,371,827	$10	15c	3-3-41	.70	1.05	1.28	12	8¾	14¼	9½
14½	12¾	13½	13¼	13⅜	Union Oil Co. of California	4,666,270	$25	25c	5-10-41	1.00	1.25	1.47	17½	12	19¾	15⅛
29¾	25⅝	26½	26¼	26¼	Union Tank Car Co.	1,177,381	N.P.	50c	3-3-41	1.75	2.07	1.16	29⅞	22¾	24¼	20⅛
2	1⅝	..	..	..	Wilcox Oil & Gas	470,768	$5	10c	2-15-40	....	.77	.52	3⅝	1¾	4¼	2⅜

•Also 5 per cent in stock. †Includes extras. ‡Also 2 per cent in stock. §Also 6 per cent in stock. —Deficit.

New York Curb Exchange

1941 High	1941 Low	Week ended Apr. 19 High	Low	Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1940	Com. sh. earn. 1939	1938	1940 High	1940 Low	1939 High	1939 Low
7	5⅛	6⅝	5¾	6⅛	American Republics Corp.	1,308,049	$10	25c	12-18-40	....	$0.14	—$0.22	10¾	4½	11¾	5½
1¾	1	1⅛	1	1	Bridgeport Machine Co.	263,700	N.P.	$1.25	12-30-37	....	—.95	—.14	3¼	1⅜	7¼	2⅛
40¼	36½	38½	38½	38½	Buckeye Pipe Line Co.	200,000	$50	$1	3-15-41	$4.00	3.13	2.36	43	28	34¾	26½
110¼	103¾	..	..	..	Chesebrough Mfg. Co.	120,000	$25	$1.50Q†	3-31-41	6.00	7.87	5.32	117	95	130	108⅝
5⅛	3¾	4⅝	4½	4½	Cities Service (new)	3,703,978	$10	....	6-1-32	....	.68	.23	6¾	4	9¼	4¼
1⅛	⅝	..	..	..	Cosden Petroleum	465,332	$1	....	.....	....	....	....	2⅛	⅝	2¼	½
15¼	12½	14½	13⅜	13⅜	Creole Petroleum	6,974,356	$5	50cSA†	12-16-40	1.00	1.38	1.64	24¼	11⅝	28	16⅜
5⅞	3¾	5⅞	5⅜	5½	Darby Petroleum	351,390	$5	25cSA	1-15-39	....	.03	.69	4⅜	2⅞	7⅛	3⅜
1½	1	..	..	..	Derby Oil & Refining	263,162	N.P.	....	.....	....	—.37	—.91	2	⅝	2⅝	1⅛
28¾	21¼	..	..	..	Eureka Pipe Line	50,000	$50	50c	5-1-41	2.25	.63	—.37	31	20¼	23	15⅛
33½	29	30	29¼	30	Gulf Oil Corp.	9,076,202	$25	25cQ	4-1-41	1.25	1.69	1.43	39⅞	25½	45⅛	29¼
63	53	54	53	53	Humble Oil & Refining	8,987,840	N.P.	37½c	4-1-41	2.00	3.33	3.98	68	47⅛	71	52⅛
7	5¾	6½	6¼	6¼	Imperial Oil of Canada	26,965,078	N.P.	25c	12-2-40	.62½	.71	.96	12⅝	5⅝	17	11⅜
3⅞	2¾	..	..	..	Indiana Pipe Line	300,000	$7.50	20c	11-15-40	•2.80	.33	.47	7¾	3	7¼	5½
10¾	8⅞	9⅝	9⅛	9⅜	International Petroleum	14,324,088	N.P.	30c	12-21-40	1.25	1.19	1.98	10¾	8¼	27½	17
2⅝	1¾	2	1⅞	1⅞	Kirby Petroleum Co.	500,000	$1	10c	3-15-41	....	.06	.14	2¾	1⅝	3¾	2⅛
10⅛	8⅞	9	8½	8½	Lone Star Gas	5,518,347	N.P.	20c	4-22-41	.70	.98	.88	10¾	7⅝	10½	7⅛
4¾	4⅛	4⅝	4⅜	4⅝	Louisiana Land & Exp.	2,966,762	$1	10c	3-15-41	.35	.22	.45	6¼	3¾	7⅜	4
10	9½	10	10	10	Margay Oil Corp.	149,943	N.P.	25cQ	4-10-41	1.00	1.52	2.28	17	9¼	17	14⅛
8	7	7¼	7⅛	7¼	Midwest Oil Co.	998,474	$10	45c	6-16-41	.90	.99	.93	8½	6½	8¾	6⅝
5¾	5⅛	5½	5⅜	5½	Mountain Producers	1,593,584	$10	30cSA	12-16-40	.60	.70	.62	6¼	4⅞	6	4⅞
12⅜	11	11¾	11⅛	11½	National Fuel Gas	3,810,183	N.P.	25cQ	1-15-31	1.00	.95	.84	13⅛	10	14	11¼
12¾	10¼	10½	10⅜	10⅜	National Transit	509,000	$12.50	50c	12-16-40	1.00	.91	.88	12½	8¾	9½	7¾
1¼	1	1	1	1	New Mexico and Arizona	1,000,000	$1	1c	12-1-37	....	.02	.02	1¼	¾	1¾	1
8	6⅝	..	..	..	New York Transit	100,000	$5	30c	5-15-41	.60	.88	.16	7¾	5¼	6	4
9¾	8	8	8	8	Northern Pipe Line	120,000	$10	50c	6-2-41	.80	.31	.24	9⅞	6	7	4½
3⅞	2⅝	3¼	2⅞	2⅞	Pantepec Oil	2,856,872	$1	....	.....	....	....	....	5½	2½	7⅝	4
1½	1	1½	1¼	1½	Root Petroleum Co.	336,045	$1	25c	2-1-37	....	.70	.17	3¼	1	5	1¼
2½	2⅛	2⅛	2⅛	2⅛	Ryan Consolidated	298,931	N.P.	10c	12-28-40	....	.16	.29	3	1½	3	1⅞
8	6½	6½	6½	6½	Southern Pipe Line	100,000	$10	25c	3-3-41	.50	.25	—.27	11¾	4¾	4⅞	3½
39¾	37	37¾	37½	37¾	South Penn Oil	1,000,000	$25	37½c	3-28-31	2.50	2.84	1.44	44	28	40½	26¾
30½	23	23	23	23	Southwest Penna. Pipe Lines	35,000	$50	50c	4-1-41	6.50	2.06	—.41	35	21	23	18
20⅜	17⅞	18⅝	17⅞	17⅞	Standard Oil of Kentucky	2,604,790	$10	25c	3-15-41	1.30	1.53	1.45	20⅞	16½	20⅛	17¼
1¾	1⅜	1⅝	1½	1⅝	Sunray Oil	1,975,876	$1	5c	12-20-40	.10	.25	.23	2	1⅜	2⅜	1⅜
3¼	2¾	2⅞	2⅞	2⅞	Texon Oil & Land	936,024	$2	10c	12-30-40	40	.49	.56	3½	2	4	2⅜
2¾	2¼	2½	2½	2½	Transwestern Oil Co.	750,000	$10	....	.....	....	—1.42	.12	3⅜	2	6	2⅜
⅛	⅛	⅝	⅛	⅛	United Gas Corp.	7,818,959	$1	....	.....	....	—.55	—.51	2⅛	¾	3⅜	1⅛

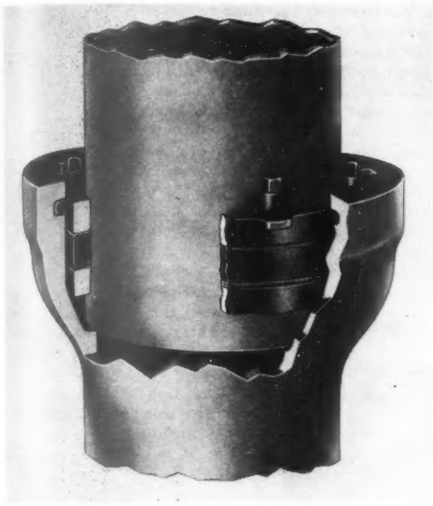
•Includes $2.50 capital distribution. †Includes extras. —Deficit.

EQUIPMENT PROGRESS...

New Dresser Joint Simplifies Joining of Cast-Iron Pipe

Developed in answer to a need for a simpler, easier-to-install mechanical joint that will last as long as the cast-iron pipe on which it is used, the new Dresser Bellmaster joint, Style 85, possesses a number of installation advantages and construction features not found in other types of joints. Low in first cost, faster and easier to install, the Style 85 joint is said to be a great advance in cast-iron pipe jointing.

The Bellmaster joint is a single-gasketed, self-contained mechanical joint that is strong, flexible, corrosionproof. It consists of a few simple parts—inner



ring, armored gasket, outer ring, a set of capscrews—all factory assembled into a single unit. To install, the Bellmaster is simply inserted in the bell end of pipe prepared to accommodate the joint, locked in place by twisting slightly clockwise, spigot end "stabbed in," and capscrews tightened. Working principle is simple and effective: as you tighten the capscrews, the inner ring is drawn closer to the locked outer ring, thus expanding the gasket against the outside of the spigot and against the inside of the bell, making a tight seal against both.

The Bellmaster's outstanding characteristic is its extreme simplicity. It comes completely assembled. Workmen have only one piece to handle when making up the joint. It is easy to order, to handle, to install. Time studies in all sorts of weather and ditch conditions prove that an ordinary workman can install a joint in from 2 to 5 minutes. All that is needed is a small ratchet wrench.

Leading cast-iron pipe manufacturers can furnish pipe with bell ends suitable for Bellmaster joints. The Style 85 joint is at present available in the following c.i.p. sizes: 4, 6, 8, 10, 12, and 16 in. Other sizes will be available soon.

TRADE LITERATURE

C. F. PEASE CO., 2601 West Irving Park Road, Chicago.—Folder on its 22-16 combination blueprinting machine, combining the Model 22 printer and Model 16 washing and drying machine. Specifications and features of this popular new model are given.

READING-PRATT & CADY DIVISION OF AMERICAN CHAIN & CABLE CO., INC., Reading, Pa.—Catalog 332 on its steel valves and cast-steel fittings It is profusely illustrated with outside and cross-section views, as well as views of a number of individual valve parts. One section gives a complete explanation of the markings of cast-steel valves and fittings and standard symbols. The typical chemical compositions and physical properties of Reading-Pratt & Cady metals are given in the pages devoted to material specifications. Design features of the various types of valves are clearly shown by means of illustrations of parts. The main body of the catalog is arranged so that each two-page spread shows exterior and cutaway views, with dimensional drawings and complete specifications for a particular type of valve of a given pressure rating. Cast-steel fittings are covered in a series of pages which show dimensional line drawings and specification tables. Engineering data applying to the selection and installation of cast-steel valves and fittings is covered in a special section.

ALLIS-CHALMERS MANUFACTURING CO., Milwaukee, Wis.—A new leaflet, B-6153, on its complete self-contained engine-driven pumping units for service entirely independent of any outside source of power supply. It illustrates various sizes and types of units applicable to irrigation, gravel washing, coal washing, fire protection and for municipal standby service. It includes easily read centrifugal-pump selection table for picking suitable unit, and overall-dimension sheet.

BLACKHAWK MANUFACTURING CO., Milwaukee, Wis.—Catalog 241, 40 pages, featuring many 1941 developments in socket, box-type, tension, and specialty wrenches for industrial, construction, and aviation fields.

Los Angeles Nomads Speaker Addresses Meeting in Spanish

An innovation at the regular monthly dinner meeting of the Los Angeles chapter of Nomads held in Los Angeles, Calif., April 9 was a short address in Spanish by Juan A. Castro of the Yacimiento Petroliferos Fiscales, Argentina. Bart Gillespie introduced the speaker and gave a brief translation of his talk upon its completion. At each meeting of the Los Angeles chapter hereafter similar talks will be given in a foreign language by representatives of oil companies in various countries throughout the world.

This first address in Spanish went over big with the members present, many of whom were able to understand in varying degrees what was said. This is another move to stimulate interest in learning the language of countries which will be visited by Nomads in their journeys to foreign fields in the interest of American oil-tool export.

Removable Back Head For Wet-Test Meters

A removable back head has been designed by American Meter Co. for its wet-test meters, in order to facilitate cleaning and easier access to the drum. When

specified, any of the "American" A1-18 series of wet-test meters for general laboratory testing and for calorimetry—including both the low-pressure and the new high-pressure models—now may be equipped with this new helpful device.

Its use is especially convenient where gas conditions make periodical washings advisable. First-hand inspection also is greatly simplified, so that corrosion and other effects may be observed more readily and the need for repairs lessened. The improved back-head assembly may be attached not only to new models but also to meters (with either flat or convex-back heads) already in service.

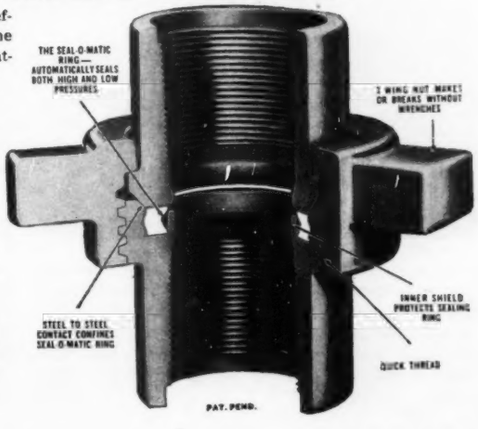
Hercules Establishes Factory Branch at Odessa, Tex.

A new oil-field sales and service branch has recently been opened at Odessa, Tex., by Hercules Motors Corp., of Canton, Ohio. Engineering service and complete stocks of gasoline and diesel engines and power units, as well as replacement parts, are available at all times at the new location. In addition to the Odessa branch, Hercules stores are in operation at Houston and Kilgore, Tex., Salem, Ill., and Tulsa.

NEW QUICK-CHANGE UNION ANNOUNCED BY GUIBERSON

Utilizing the force of pressure to automatically effect a seal has been accomplished by Guiberson in the new Seal-O-Matic union. This self-sealing action is attained by means of a flexible, molded, oil-resisting Seal-O-Matic ring. A positive seal is attained independent of the tightness of the wing nut. Field replacement of the ring is easily accomplished. Maximum misalignment of the union will not disturb the seal. Hubs are turned from special high-tensile solid-steel bars.

Principle of operation has been thoroughly field tested on the quick-change union used with the Guiberson Type "H" drilling head. In repeated hydrostatic tests a 2-in. stock Seal-O-Matic union has passed the grueling test of 19,500 lb. per sq. in. pressure. Exacting inspection failed to disclose damage to either the flexible sealing ring or the union. Available in 2, 2½, 3, and 4-in. sizes from the Guiberson Corp., Dallas, Tex.


THE SEAL-O-MATIC RING— AUTOMATICALLY SEALS BOTH HIGH AND LOW PRESSURES
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QUICK THREAD
PAT. PEND.

FRANKS MANUFACTURING CORP. ADDS TO TULSA PLANT

The 700 by 50-ft. plant of the Franks Manufacturing Corp. in Tulsa is shown in this aerial view, taken recently after the latest addition to the structure. When the company was organized in 1930 the plant was only 182 ft. long, and its three expansions since that date, including the building of numerous smaller warehouses, has been paralleled by a growth in plant personnel from eight men in 1930 to approximately 350 at the present time. The Franks organization has grown rapidly by presenting revolutionary oil-field equipment which has virtually put the industry on wheels. The Franks Manufacturing Corp. now has units in use in all important fields in the United States as well as in several foreign countries.

New Oster Machine Tool Now Equipped With Turret

To meet the requirements of the defense program, the Oster Manufacturing Co. of Cleveland, Ohio, announces a new turret for its No. 601 "Rapiduction" machine which was placed on the market about 6 months ago. Originally equipped with a cross slide and plain saddle only, the machine can now be equipped with a six-station turret. The machine thus equipped satisfies the demand for a simple, plain-head, hand-operated screw machine which does not require a highly skilled operator.

The turret is hand operated and hand indexed with the saddle stops automatically synchronized with the revolution of the turret. The radial thrust of the turret is taken by a massive ball bearing and an adjustable turret locking stud is provided for maximum rigidity. Hardened, taper lock bolt and lock bolt bushings insure long wear. Each turret face has six tapped holes for mounting certain popular sizes of tool holders. Either a lever-fed or screw-fed cross slide can be furnished, as desired. Both worm and direct drives to spindle are now available with power furnished by a two-speed motor. Reverse or electric braking control is optional.

Multiple V-belts from the motor to worm shaft or spindle is the method of drive—speed changes being obtainable through quick-change sheaves giving spindle speeds from 140 to 1,000 r.p.m. in the worm-driven machine and from 900 to 3,000 in the direct drive. The spindle runs on ball bearings as well as the worm in the worm-driven models. The spindle nose is No. 6-Al American standard flange type ground to master gages. A coolant pump, mounted in the base, is driven by a V-belt from the motor.

New Type of Rubber Hose Introduced by Manhattan

As a result of its latest development in hose construction, the Manhattan Rubber Manufacturing Division, Passaic, N. J., has announced the introduction of Condor Homo-Flex hose, which is claimed to combine balance, homogeneity, and flexibility to a high degree.

According to the manufacturer, the exclusive Homo-Flex principle of balanced engineered construction was first applied to conveyor belts. Because of the unusual service and high-tonnage records resulting on all types of conveying jobs, Manhattan engineers experimented in applying this principle in the design of hose. After months of experiments and exhaustive field tests under the most severe conditions, the Condor Homo-Flex hose line was developed.

Among the advantages claimed for this hose are: extreme flexibility, lightness in weight, ease of handling, inseparable covers and plies, uniform diameters, and less elongation and expansion. Condor Homo-Flex is manufactured in 50-ft. lengths on accurate steel mandrels in several types that cover a wide variety of service.

Thermocouple Checking Furnace Redesigned by Leeds & Northrup

Thermocouples may be checked to greater accuracy and over a wider temperature range in the newly designed Leeds & Northrup checking furnace. This equipment is a small electric furnace which provides a zone of practically uniform temperature for the intercomparison of laboratory standard couples and for comparison of laboratory standard and plant standard couples.

A new accessory which increases accuracy of checking is a cylindrical copper equalizing block that fits inside the furnace. Drilled into this block are five wells to hold the comparison standard and the four couples being checked. With the equalizing block, checks can be made within ±1° F. from room temperature up to 1,000° F. Without it, checks can be made with ±3° F. over a range of 300° to 1,800° F.

Available with heating elements for either a.c. or d.c. operation on 115 or 230 volts, this furnace requires an input ranging from 40 watts at 300° F. up to 1,000 watts at 1,800° F. When temperature must be raised rapidly, input can be increased to 5,000 watts. Working space inside the furnace is 4 in. in diameter and 36 in. deep. Outside diameter is 14¼ in. For further details, ask Leeds & Northrup Co., 4934 Stenton Avenue, Philadelphia, Pa., for Catalog E-33A-503.

NEW YORK NOMADS' APRIL MEETING SETS NEW HIGH IN INTEREST, HIGH JINKS AND ATTENDANCE

On April 7 the New York chapter of the Nomads held their third meeting of this year. The attendance was the largest in the history of this organization; 68 members and their guests were treated to a most interesting address on present-day world affairs and some of the factors which led up to today's world strife.

This address, given by Walso Stephens, for some years head of the chair of foreign affairs at Columbia University, New York City, during which time he acted as unofficial observer at the League of Nations, Geneva, was closely related to the interests of Nomads and of oil men everywhere and was received with hearty approval. Mr. Stephens in his discussion called for active aid and assistance to the British from oil men and from all democracies, who must perish if the Axis war for world domination is permitted to succeed. He is now associated with his brothers in the management of the Ray B. Stephens Co., oil producers with headquarters in Oklahoma City. Those attending the meeting are shown above.

AMONG EQUIPMENT MEN...

Corbett-Wallace Insulation Corp. Formed at Houston

Announcement has been received of the formation of the Corbett-Wallace Insulation Corp. with which S. Ray Jordan has been employed as sales manager. The new company has been organized for the purpose of distributing and contracting the application of Eagle-Picher high and low-temperature insulating materials. This company is to include a competent engineering service, and a sizable stock of insulation products for the convenience of its customers in the Texas and Gulf Coast areas.

S. RAY JORDAN

The officers in this newly formed company are Charles S. Wallace, president and treasurer, and L. Keith Baldwin, vice president and secretary. The company's address is Box 42, Houston, Tex.; it will be located at 2431 Summer Street.

Air Reduction Announces Changes in District Managers

M. G. Wicker, formerly connected with the Baltimore office of Air Reduction Sales Co., has been appointed manager of the Oklahoma City, Okla., district. Mr. Wicker's 11 years with Airco has given him wide experience in the oxyacetylene welding and cutting industry. Prior to this new appointment, Mr. Wicker served in the Birmingham, Atlanta, and Baltimore offices of Air Reduction.

M. G. WICKER

E. H. Anchors, formerly manager of the Oklahoma City district of Air Reduction Sales Co., has been appointed manager of the Birmingham district. Mr. Anchors began his career 16 years ago with the Commercial Acetylene Supply Co. He was southern manager of this company when it was acquired by Air Reduction. Since that time he has served as manager at the Atlanta and Oklahoma City district offices.

Kobe, Inc., Appoints New Houston Representative

The appointment of C. E. Buchner, Jr., as Houston, Tex., district representative for Kobe, Inc., manufacturer of the Kobe hydraulic-pumping system, screen pipe, and gravel-packed liners, has just been announced. Mr. Buchner will be in charge of the Gulf Coast technical and sales operations under the direction of P. D. Cornelius, district manager, and will make his headquarters in the company's offices at 1813 Esperson Building, Houston.

C. E. BUCHNER, JR.

Mr. Buchner attended the petroleum engineering school at Oklahoma University and the Tulsa University and upon graduation joined the engineering department of Sinclair Prairie Oil Co., later becoming interested in technical and sales problems involving pumping equipment; and for a number of years has been active in this work on the Gulf Coast. Mr. Buchner brings to his position a well-rounded experience with pumping problems throughout that territory.

Mr. Buchner's appointment is part of an expansion program on the part of Kobe, Inc., necessitated by the increasing interest in and use of the company's gravel-packed liners, screen pipe, and hydraulic-pumping systems.

McNally Appointed Sales Manager of Westco Pump

Micro-Westco, Inc., Bettendorf, Iowa, has just announced the appointment of H. L. McNally to position of sales manager of the Westco pump division. This advancement from the position of assistant sales manager resulted when Leon F. Wernentin, former sales manager, was promoted to the sales department of the Bettendorf Co., the parent organization.

H. L. McNALLY

Mr. McNally joined the company over 16 years ago and steps into his present position with a wealth of practical knowledge of pump production and sales, gained through his varied experience in the factory, office, and field. No radical changes in company policies are contemplated by Mr. McNally, although he has already made the first move in a program of closer cooperation with the Westco distributing organization, by adding two sales engineers to the office force. These engineers, C. V. Copeland and Ivor G. Morgan, will assist Mr. McNally in the promotion of both domestic and industrial turbine-type and centrifugal pumps.

Lincoln Appoints Welding Consultant at Washington

The Lincoln Electric Co., Cleveland, Ohio, announces the appointment of B. J. Brugge as its welding consultant and engineer at Washington, D. C. He will be engaged in consulting work having to do with the application of arc welding in the national-defense program and will be available for such work with all governmental departments. He will be associated with T. A. Canty, Inc., Lincoln representatives in Baltimore, Md.

He is a graduate of Purdue University and began his career in arc welding with 2 years in the Lincoln research laboratory. In 1935 he was granted a leave of absence to assist the application of electric welding in the Near East. Serving in the capacity of welding superintendent for the Anglo-Iranian Oil Co., he spent 2 years at Iran, Persia, supervising welding operations in construction of refineries and pipe lines.

Following his work in Persian oil fields, Mr. Brugge spent 4 months in the British Isles as welding consulting engineer for British and Scottish firms. He has been associated with Lincoln since 1931.

Frick-Reid Store Managers Hold Meeting in Tulsa

A meeting of store managers and department heads for Frick-Reid Supply Corp. was held at Tulsa on April 18 and 19, principally for the purpose of assisting in revising the manual of instructions for stores and offices. Out-of-town store managers included William J. Whatley, Oklahoma City; J. L. Purser, Chase, Kans.; E. A. Ellis, Pampa, Tex.; Bernard Lamun, Big Spring, Tex.; R. J. Andrew, Houston, Tex.; C. A. Nicklas, Bradford, Pa.; W. S. Frisbie, Salem, Ill., and G. E. Markland, Shreveport, La.

"OILWELL" ANNOUNCES CHANGES IN DISTRICT OFFICE MANAGERS

A. D. Otto, manager of Oil Well Supply Co.'s office at Chicago since 1936, has been appointed manager of the Pittsburgh, Pa., office. Becoming associated with "Oilwell" in 1924 as district sales manager at Casper, Wyo., Mr. Otto later filled similar positions at Denver, Colo., Calgary, Canada, and Houston, Tex. For 2 years preceding his transfer to Chicago as manager of that office, Mr. Otto was assistant manager of stores, midwest division, with headquarters at Dallas, Tex.

A. D. OTTO

JOHN M. POST

F. D. SMITH

John M. Post, manager of "Oilwell's" eastern division since 1929, has been appointed manager of the tubular goods department. This department, located at Pittsburgh, Pa., serves all of "Oilwell's" sales divisions. Mr. Post joined "Oilwell" in 1905 at the Washington, Pa., store. In 1909 he transferred to Beaumont, Tex., and for the next 20 years was associated with the company's Gulf Coast and Mid-Continent activities. Mr. Post first served as a district manager in 1915 at Houston and subsequently held similar positions at Shreveport, La., and Tulsa, moving from the latter point to Oil City, Pa., in 1929 to become manager of the eastern division.

F. D. Smith, manager of the company's Michigan district for the past 5 years, has been appointed manager of the company's eastern division, comprising all domestic oil-producing areas east of the Mississippi River. Experienced as a drilling contractor, Mr. Smith joined "Oilwell" in 1928 at Owensboro, Ky.

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FOR SALE Oil and gas leases located on structure and near well now drilling. Depth of drilling, through the Corniferous, 700 to 800 feet. W. P. Harley, Bowling Green, Ky.

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EXCEEDINGLY shallow oil found in undeveloped region. Write N. M. Sauls, Geologist, Cookeville, Tennessee.

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WILL sacrifice for quick sale account of health, Lea County, New Mexico 40 acres each Sections 15 and 21, 17S-36E. Lock Box 126, Vinton, Va.

FARM-OUT deals offsetting gas wells in McLouth field and other active counties. Harry Haynes, Grantville, Kan.

CHOICE BLOCK oil leases, Eastern Illinois, five years, rental 25 cents per acre, ⅞ oil and gas. Some geology, want a test, will sell some acreage to carry expense. S. J. Burkitt, Moweaqua, Ill.

ATTRACTIVE drilling blocks on structure for development, Illinois. Royalty offsetting drilling wells. Cash. Illinois Production, P. O. Box 58, Effingham, Illinois.

WANT drilling deal highly geologized structure, Elk Co. Kans. Already proven productive. 5 producing horizons 1450'-2400'. Direct offset upstructure from 400-bbl. well. P. O. Box 1134, Tulsa, Okla.

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A REAL opportunity if you can finance an oil developing project with $5000 to $10,000, 800 to 2000 ft. Unlimited future D. H. Reavis, White Bluff, Tenn.

DRILLING contractor and production Supt.—38 yrs. old, 20 yrs. experience in Mid-Continent fields, wishes to contact party or parties with money to join me in forming partnership to develop proven leases. References exchanged. Address
BOX A-462
The Oil and Gas Journal, Tulsa, Okla.

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Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

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We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

Legal Blanks

BURKHART'S legal blanks and general forms serving Mid-Cont. oil field since 1908—Okla. Kans. N. Mex. Tex. Ala. Ark. Fla. Ga. Ill. Ind. Ky. La. Mich. Miss. Mo Neb. N. Dak. Tenn. Wyo. Free catalog samples on request. Burkhart Ptg. & Sta. Co., 115 S. Cinn., Tulsa, Oklahoma.

Incorporations

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

CAPITAL SEEKERS
Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan

Help Wanted

SALESMAN experienced in sale seamless steel tubing and pipe, alloys and carbon grades, or man with sales experience steel commodity or steel specialty selling. Write, enclosing full particulars. Box A-452, Oil and Gas Journal, Tulsa, Okla.

SALES Representatives with established production clientele and other production lines wanted to represent old Mid-Continent Manufacturer on Gulf Coast and in Illinois. Give full details and references in first letter. Address Box A-450, The Oil and Gas Journal, Tulsa, Okla.

WANTED experienced refinery designing draftsman, permanent. Salary. Box A-436, The Oil and Gas Journal, Tulsa, Okla.

Situations Wanted

EXPERIENCED Lease and Title Man needs work. Capable, Honest and willing. Best references. P.O. Box 372, Jasper, Tex.

GRADUATE ME desires position Dallas or vicinity. Two years mechanical drafting and two years refinery design drafting at which now employed. Prefer refinery engineering. Box A-461, The Oil and Gas Journal, Tulsa, Oklahoma.

STEADILY employed land man, 33 years old, excellent draftsman, good typist, experienced in scouting, leasing and curing titles, desires connection with good, small oil company. Write Box A-460, The Oil and Gas Journal, Tulsa, Oklahoma.

Mailing Lists

ROYALTY owners, Oil Investors, Unit holders, Stockholders in Oil and Royalty Companies. Personnel lists of every branch of oil industry. All by States. We buy lists. New catalogues ready. Oil Industry Mailing List Co., Tulsa Loan Bldg., Tulsa, Oklahoma.

Equipment Wanted

WE ARE interested in buying for cash 100 to 150 tons, of light used, fishing and drilling cable tools, all kinds, suitable for spudders to drill up to 2,000 feet deep. Prices by the ton F.O.B. cars, not to exceed $20.00 per ton. Buyer will inspect personally. Will leave Cuba about May 18. Write for detailed list and specifications to: Oil Well Drilling Co., Apartado No. 15, Los Arabos, Cuba.

WANTED: All makes of used Diesel Engines, preferably "Caterpillar" Diesels. Write price, condition and location to Fabick Tractor Co., Box 503, Salem, Ill.

For Sale—Equipment

FOR SALE: 4—OCS Roller Bearing Chain Driven Sand Reels. I. T. I. O., Bartlesville, Okla.

SALE—New 9⅝"—13⅜"—13" O.D. Casing Couplings. Want to buy a SHEAR and PLATFORM SCALE. Box 574, Tulsa.

CASING FOR SALE IN WESTERN COLORADO—5-½" and 6⅝" O.D. welded casing in excellent condition. S. W. McLaughlin, Rangely, Colorado.

FOR SALE at Bartlesville, Oklahoma: 2—60-ton Joyce 18" lift hydraulic jacks complete. I. T. I. O. Co., Bartlesville, Okla.

FOR SALE—Boilers, Six new A.S.M.E. Code Locomotive Type Boilers, 60 to 125 H.P. 200 lb. Pressure.
HEISLER LOCOMOTIVE WORKS
Box 927, Erie, Pa.

REFINERY EQUIPMENT—PIPE—VALVES & FITTINGS

BARNSDALL REFINERY—OKMULGEE, OKLAHOMA

COMPLETE COMBINATION KELLOGG UNIT

75,000 ft. 4" Std. Line Pipe T & C
16,000 ft. 3" Std. Line Pipe T & C | **Breckenridge, Texas**

Complete Line Series Steel Valves & Fittings

SONKEN-GALAMBA SUPPLY COMPANY

W. C. Berry and H. J. Galamba
Riverview at Second, Kansas City, Kansas

Robt. W. Duden
2100 S. Union, Tulsa, Oklahoma

FOR SALE: At our Oklahoma City warehouse slightly used Cardwell KS DHS skid type oil well servicing unit equipped with DHK Waukesha motor. I. T. I. O. Co., Bartlesville, Okla.

FOR SALE

One gasoline drilling rig with two 85 H.P. Waukesha motors and unitized draw works complete.

300 sets 3" A.P.I. tool joints.

10,000 Ft. 7" O.D. 26# seamless casing, once run.

15,000 Ft. 4½" O.D. seamless drill pipe equipped with both regular and full hole tool joints.

In addition to the above we have several thousand feet of all sizes line pipe. Also a drilling rig capable of drilling to 6500 feet and a complete stock of casing, drilling and pumping equipment.

Wire, Write or Phone for Prices.

Louisiana Iron & Supply Co.
Shreveport, La.

FOR SALE OR RENT: Gas engine powered Rotary Drilling Rig complete. Suitable for 4,500' drilling. Box 1360. Phone 312. Seminole, Okla.

FOR SALE — At Oklahoma City — 11 6" and 8" Byron-Jackson built-in motor pump heads for use in operating deep-well turbine pumps. I. T. I. O. Company, Bartlesville, Oklahoma.

NEED TANK CARS?
For Sale:

Forty, 10,000 gal. Class III, built late 1918 by Gen. Amer. Eight lines 2" pipe.

Well maintained and ready for immediate service.

Many other TANK CARS for sale, too.

Iron & Steel Products, Inc.

36 years' experience

13412 S. Brainard Ave., Chicago, Ill.

"ANYTHING containing IRON or STEEL"

1—18 x 6 x 20 National Simplex Pump, #18465, outside and packed pot valve type, and 1—Byron Jackson 4 x 15 two Stg. VC #100983 500 GPM Motor Driven. Box 1011, Mount Pleasant, Texas.

CROWN BLOCKS: All types light and heavy duty production and cable tool—Real Bargains. Lucey Products Corp., Tulsa, Okla.

FOR SALE: Model 15 Buckeye ditching machine, A-1 condition. Cheap for cash. A. L. Abrams, Woodville, Okla.

YOUNG six-cylinder Drilling Engines, four-cylinder Cyclone and Waukesha Drilling Engines, Reid Reverse Clutch on skids, IR-ER1 10 x 8 Compressor, Medart 4¼ and 5" Pillow Blocks Types A&TS, 2" Double and Triple Diamond Chain, C. S. Clamp Hub Sprockets—28, 29, 30, 33, and 34 tooth, 2"-P, 13-D-41" and 13" V-Belt Sheaves, 16 T. CS Split Sprocket for #4 A.P.I. Chain, Electric Generating Units, 180 H.P. Buda JL-6 Power Unit with Clutch, Under-Road Boring Machine for Pipe Lines.

YOUNG ENGINE CORPORATION,
Box 532, Canton, Ohio.

USED DRILLING EQUIPMENT
1—5-C-3 Ideal Unitized Drawworks
2—Martin-Decker Weight Indicators
2—3½" B-J Extra Heavy Tongs
2—6⅝" B-J Extra Heavy Tongs
1—W-K-M Hauser Kelly Drive
LUCEY PRODUCTS CORP., Tulsa.

FOR SALE

30-TON S/G LIMA GASOLINE, 0-4-0 SWG. LOCO. NEW 1931, GOOD COND. ROLLER BEARING. Immed. Delivery.

2, 0-4-2 S/T Oil Burner Locos. A.S.M.E. BOILERS. New 1919, used only 4 years.

SEND US YOUR INQUIRIES FOR ANY KIND OF LOCOMOTIVES

IRON & STEEL PRODUCTS, INC.
36 years' experience
13412 S. Brainard Ave.
Chicago, Ill.
***"Anything* containing IRON or STEEL"**

---

25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.

CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St., Cincinnati, Ohio

FOR SALE: 6—40 gallon foam—outdoor type mounted fire extinguishers. Also 34—5 gallon foam type. I.T.I.O., Bartlesville, Okla.

TRACTORS

Caterpillars, crawler type, size "35" $375; size "65" with nigger head winch $750; Caterpillar RD8 with Letroneau bulldozer, $2000; and Allis-Chalmers, Model L, with Baker bulldozer $1850. Perfect condition. O. C. Evans, Mount Sterling, Kentucky.

FOR SALE—Vertical Twin Cylinder 55 H.P. Bruce McBeth Gas Engine, $390 f.o.b. Brilliant, Ohio. Write P. O. Box 392.

FOR SALE at Bartlesville: One 8" x 3¼" x 8" Ingersoll-Rand High Pressure Portable Compressor. I.T.I.O., Bartlesville, Okla.

YOUR dependable and cheapest source of supply!
Tank & Freight Cars: any kind
Tank & Freight Car Repair Parts:
Locomotives: All Kinds
Relaying Rails

Perhaps *we* can supply your requirements and — immediately!
OTHER MACHINERY AND EQUIPMENT TOO!
Destination inspection if desired!

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36 years' experience
13412 S. Brainard Ave., Chicago, Ill.
***"Anything* containing IRON or STEEL"**
Ask to be placed on our various mailing lists.

FOR SALE — Engines, pumps, motors, all sizes of pipe, flues, compressors, equipment of all kinds. Let us have your inquiries. KARL NUSSBAUM, Louisville, Ky.

SURPLUS MATERIAL
FOR SALE

We have the following for sale—
1—Braden Sectional Steel Building 26-ft. x 170-ft. x 10 ft.
9—2-in. Emsco Flow Controller Valves with companion flanges, 1000-lb. working pressure, complete.
43—2-in., Fig. 178 Powell Hydraulic Gate Valves for 1200-lb. air working pressure.
12—2-in., Fig. 177 Powell Hydraulic Check Valves 2000-lb. air working pressure.
13—2-in. 800-lb. Hydraulic Relief Valves.
All in first class condition.
MIDSTATES OIL CORP.
518 Nat'l Bank of Tulsa Bldg., Tulsa
Phone 3-4196—L.D. 81

5—15,000 GAL. factory built, quarter inch riveted, steel, gasoline storage tanks. Located at Wellington, Kans. First class condition. W. R. Price, Box 430, Winfield, Kans.

FOR SALE

1 Rotary Drilling Rig D. C. Electric Powered By 2—300 HP Waukesha Gas Engines; complete LESS Drill Pipe.
1 Large Mechanical Rotary Drilling Rig, Tex-Rope driven with Large Portable Clutch powered by 2—300 HP Waukesha Gas Engines; complete LESS Drill Pipe.
1 Cable Tool Drilling Unit Lee C. Moore Type "B" Front, Unitized Bull Wheels with ⅞" x 4500' Drilling Line, O.C.S. Greyhound Chain driven Sand Reel complete with ⅞" x 5500' Sand Line, Boiler, Engine and Tools Complete. Has drilled in two wells after Rotary. Practically new.

FOR FURTHER INFORMATION AND INVENTORY WRITE
Box A-401,
The Oil and Gas Journal, Tulsa, Okla

FOR SALE

HEAT EXCHANGER — 606 — 1¼" tubes 9' 6" long, 11' 8" long over all, 5' 6" inside diameter, 6' outside diameter, extends 12" where heads bolt on, 1" steel heads, 1¾" cast iron shell, 1¾" flue heads.

KARL NUSSBAUM, Louisville, Ky.

FOR SALE: 1—8x8 Ingersoll-Rand Compressor, 1—10x4½x10 Chicago Pneumatic Compressor, 1—8x4x8 Wheatly high pressure pump direct driven. Williams Supply Co., Bartlesville, Okla.

SPECIAL OFFERING

1—14 x 14 Type 5 ND Weber Plain Bearing Gas Engine complete.—New.
1—15 x 15 Type 6 ND Weber Oil Engine with Bronze Main Bearings complete.—New.
1—15 x 15 Reconditioned 80 H.P. AO Franklin Valve less Oil Drilling Engine, less Clutch.
1—8 x 8 x 10 Gardner-Denver Duplex Steam Pump with Bronze Rods, Brass Valves and Cast Iron Liners.—New.
2—10 x 3½ x 10 Gardner-Denver Duplex Steam Oil Line Pumps—All Iron Fitted.—New.
1—10 x 4 x 12 Union Duplex Horizontal Oil Line Pump, High Pressure, Steam Driven 800# Maximum Pressure, Steel Rods, Bronze Removable Liners, Bronze Valves, Cast Iron Liquid Pistons, Rock Hard Piston Packing.—New.
2—10 x 6 x 12 Burnham Imperial Pattern Steam Pumps fitted with Bronze Liners, Bronze Wing Guided Valves and Seats, Bronze Piston Rods, C.I. Pistons and Hydraulic Packing.—New.
1—3" to 6" Inc. Taylor & Wilson Mfg. Co., Reconditioned Pipe Threading Machine complete with Jack Shaft and a complete set of Dies.

FOR FURTHER INFORMATION
Call or Write

ATLAS SUPPLY COMPANY
Phone L.D.—26 **Box 1548**
Muskogee, Okla.

FOR SALE: Pressure vessels 8' diameter by 31' 8" long. Tested 200 pounds hydrostatic pressure. 3—12 x 10 x 18 duplexes National Transit steam pumps. Harvey Brothers, 706 Rudd, Canon City, Colo.

FOR SALE—Jumbo-D Ft. Worth Spudder bought new December 1940, complete with drilling tools from 15-inch to 5-inch with casing tools, underreamer and underdigger, or will trade for Cardwell Unit. Phone 299, Frank C. Newsom, Newsom Drilling Company, Box 839, Wewoka, Okla.

CRUDE-OIL PRICES IN REPRESENTATIVE FIELDS

Pure Oil Co. converted its purchase policy in the Gueydan field, Vermilion Parish, Louisiana, from a flat price of 94 cents per barrel for heavy and $1.08 for light crude to a gravity table effective April 16. The flat prices were posted April 1. Prices in the new gravity-table scale up at stages of 2 cents from 80 cents for crude below 21° gravity to $1.12 for 36° gravity and above.

Following are representative crude-price schedules in prices per barrel:

East Texas	$1.15
Conroe	1.33
Tepetate, Louisiana	1.08
Smackover, Arkansas, heavy	.76
Illinois basin	1.22
Pecos County, Texas	.85
Lance Creek, Wyoming	.82
Bradford, Pennsylvania	2.15

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity	Signal Hill Calif.	Oklahoma, Kansas	Gulf Coast, Texas	West Texas, Lea County N. M.
18-18.9	$0.65	...	...	...
19-19.9	.69	...	$0.96	$0.60
20-20.9	.73	$0.75	.98	.62
21-21.9	.78	.77	1.00	.64
22-22.9	.82	.79	1.02	.66
23-23.9	.86	.81	1.04	.68
24-24.9	.90	.83	1.06	.70
25-25.9	.95	.85	1.08	.72
26-26.9	.99	.87	1.10	.74
27-27.9	1.03	.89	1.12	.76
28-28.9	1.07	.91	1.14	.78
29-29.9	1.10	.93	1.16	.80
30-30.9	1.14	.95	1.18	.82
31-31.9	...	.97	1.20	.84
32-32.9	...	.99	1.22	.86
33-33.9	...	1.01	1.24	.88
34-34.9	...	1.03	1.26	.90
35-35.9	...	1.05	1.28	.92
36-36.9	...	1.07	1.30	.94
37-37.9	...	1.09	1.32	.96
38-38.9	...	1.11	1.34	.98
39-39.9	...	1.13	1.36	1.00
40 and above	...	1 15	1.38	1.02

Tank-Wagon Changes

(Continued from Page 152)

was 0.25 cent. The company made a general advance on No. 2 and No. 3 fuel-oil tank-wagon prices in New Jersey of 0.2 cent per gallon April 16. Kerosene tank-wagon prices were advanced 0.3 cent per gallon throughout North Carolina on April 11. On April 9, the company advanced No. 2 and No. 3 fuel-oil prices in New Jersey 0.3 cent per gallon and on April 11 increased No. 1 fuel oil 0.2 cent. The kerosene tank-wagon price was increased 0.75 cent per gallon April 12 at Danville, Va.

Continental Oil Co. advanced regular-gasoline tank-wagon prices 0.5 cent April 4 at Santa Fe, N. M., and 1 cent at Albuquerque and Roswell, N. M. A general tank-wagon price advance of 1 cent was made April 7 in Utah, Colorado, Wyoming, and at Boise and Twin Falls, Idaho; Tulsa and Oklahoma City, Okla. The advance April 7 at Muskogee, Okla., as 0.5 cent. On April 8, the tank-wagon price was advanced 0.75 cent at Little Rock, Ark. Kerosene was advanced 0.5 cent per gallon April 7 at Oklahoma City and 1 cent at Tulsa, Okla.

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